This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

Br from John Grant.

71

17364 d. 26

Presented to

The Deputy Adjutant General in Ireland.

Office of the Commanding Engineer in Ireland.

7th. October 1858.

NARRATIVE OF OPERATIONS

IN THE

ARRANGEMENT AND FORMATION

OF A

CAMP FOR 10,000 INFANTRY

ON THE

CURRAGH OF KILDARE.

BY THE LATE

LIEUT.-COLONEL H. W. LUGARD,

ASSISTANT ADJUTANT-GENERAL, ROYAL ENGINEERS.

DUBLIN:

PRINTED BY ALEX. THOM AND SONS, 87 & 88, ABBEY-STREET.

1858.

PREFACE.

On the departure of the late Lieutenant-Colonel Lugard to assume the command of the Royal Engineers attached to the Chinese Expedition, I, at his request, and with the sanction of Colonel Cowper Rose, Commanding Royal Engineer in Ireland, undertook the completion and publication of the Curragh Narrative.

The Narrative was written by Colonel Lugard previous to his departure, and the plans and other details have been prepared and arranged in accordance with his wishes and intentions.

I have to thank Mr. Sands, Deputy Surveyor, and the other gentlemen of the Civil Department, for the able assistance they have afforded me in completing the drawings, which has rendered my task comparatively easy.

Since the Narrative was written Colonel Lugard has passed to his last resting-place. It will remain a record of his ability, energy, and zeal in the public service.

He died at Hong Kong, on the 30th November, 1857, while making the necessary preparations and arrangements, as Commanding Engineer, for the attack on Canton. Many deplore his untimely death, and the service has lost a valuable officer. His kind-heartedness and other excellent qualities endeared him to all who knew him; and by the tact, judgment, and gentlemanly spirit and manner in which his duties were invariably conducted, he excited the zeal, stimulated the willing energies, and drew out the abilities of those who had the pleasure of serving under him.

GEORGE A. LEACH,
Captain, R.E.

Ordnance Survey Office, Dublin,
9 *March*, 1858.

CONTENTS.

	Page
Introductory Letter.	
The Narrative,	9
List of Huts at the Camp,	23
General Regulations for the Camp,	25
Regulations in case of Fire,	27
General Order,	29
Report on the Water Supply, by W. Forsyth, C.E.,	29
Letter from Colonel Wood, Deputy Adjutant-General,	30
Letter from Lieutenant-Colonel Walker, Assistant Quartermaster-General at the Curragh,	31
Memorandum and Returns, &c., by Doctor Maclean, Director-General of Hospitals,	31
Letters from Contractors,	34

LIST OF PLATES.

Map of Ireland, showing the Military Divisions.

Curragh Sheet—Ordnance Survey.

Enlarged Plan of Squares C and G.

Enlarged Plan of the principal detached blocks of buildings.

Detail Plans and Index.

INTRODUCTORY LETTER.

TO GENERAL SIR JOHN F. BURGOYNE, G.C.B.,

INSPECTOR-GENERAL OF FORTIFICATIONS.

SIR,—When your instructions of January and February, 1855, were received in Ireland, for the construction of a camp for 10,000 Infantry, upon the Curragh of Kildare, the Commanding Royal Engineer instituted a careful search for plans or other records respecting the camps formed upon the same ground some fifty years ago—conceiving that, although the troops so assembled were under canvas, whereas the order received was for a camp of a more permanent nature, much valuable information would be obtained as to the sites to be avoided and those former experience had shown to be the best; also as to the natural resources of the locality, particularly in the important requirement of water. But no such plans or records could be found; and beyond the site of a former camp, shown upon the Ordnance map and still traceable on the ground, and the very imperfect accounts gained from local residents and from some few old officers, as to the numbers encamped and their recollection of occasional distress for want of water, no information could be procured. To guard against the recurrence of a similar inconvenience and the absence of information at some future day respecting our recent operations, and to place on record the results of our proceedings, and with a view, also, of affording some professional information and assistance to officers who may have similar establishments to design and execute without having had the advantage of gaining practical experience at either of the camps in the United Kingdom, I employed a short period of relaxation from my ordinary duties in drawing up the following Narrative; and having, with the permission of Colonel Cowper Rose, Commanding Royal Engineer, submitted to you my wishes, I obtained authority, under date 30 January, 1857, $\frac{77}{333}$, to complete the Record as an official document, with plans of each description of Hut, &c., and the maps engraved by the Ordnance Survey Department. On the establishment of peace with Russia and the disembodiment of the Militia, the immediate objects for which the camp was apparently formed ceased to exist; but as a camp of instruction, and as a means of accommodating a large force of Infantry for the purpose of being trained and manœuvred in conjunction with Cavalry and Artillery, its value is undiminished, and for such a purpose it is admirably situated, having the extensive Cavalry Barrack of Newbridge contiguous and 5,000 acres of Curragh as a drill-ground.

In April, 1856, the five Military Districts in Ireland were abolished and three new Divisions were substituted, viz., Dublin, Cork, and the Curragh. The head-quarters of the Curragh Division were fixed at the camp, with a Staff, consisting of one Lieutenant-General in Command, three Major-Generals as Brigadiers—one being for the Cavalry Brigade quartered at Newbridge—one Assistant Adjutant-General, one Assistant Quartermaster-General, three Majors of Brigade, and five Aides-de-Camp.

With the concurrence of Colonel Rose, the detail plans of the Huts are being reduced in scale and prepared for the lithographer in this office; and with a general map of Ireland, showing the new military organization, and the beautiful map and plans of the encampment, prepared at the Ordnance Survey Office, Phœnix Park, will be attached to the Narrative.

Circumstances having afforded time to test the arrangements made in the formation of the camp, I have solicited the Deputy Adjutant-General, the Deputy Inspector-General of Hospitals, and the Assistant Quartermaster-General of the Curragh Division to favour me with their opinions as to how far the discipline, comforts, and health of the troops have been benefited, or otherwise, by the peculiar formation, site, and general arrangements of the camp. Lord Seaton has, with much kind courtesy, promised that a reply shall be sent to my inquiries, and I understand that the Medical Department have a statement in preparation, and Lieutenant-Colonel Walker has promptly responded to my request. I propose that these valuable opinions shall be added to the Record.

His Royal Highness the General Commanding-in-Chief having been pleased to appoint me Commanding Royal Engineer to the Force about to proceed on active service to China, I am unable to complete the Record myself, but Captain Leach, Royal Engineers, has, at my request, kindly undertaken the trouble.

I have the honour to be,
&c., &c.,

H. W. LUGARD,
LIEUT.-COLONEL, R.E.

NARRATIVE OF OPERATIONS

IN THE

ARRANGEMENT AND FORMATION

OF A

CAMP FOR 10,000 INFANTRY

ON THE

CURRAGH OF KILDARE.

On the 24th January, 1855, an intimation was received by the Commanding Royal Engineer in Ireland, that a camp would probably be required at the Curragh of Kildare, capable of accommodating 10,000 men. Plans of huts, as proposed for the encampment at Aldershot, were also sent from the office of the Inspector-General of Fortifications. Such an intimation, however, was not considered sufficiently definite to warrant more active measures than the preparation of specifications and the making of such other general arrangements as would facilitate the early commencement of operations, on the receipt of more positive instructions. On the 27th of February, full authority was received to proceed with these extensive works, and by the 1st of March, advertisements were issued for contracts, and on the 13th, the tender of Messrs. Courtney and Stephens was accepted, for the construction of 430 soldiers' huts, 10 for staff serjeants, and 10 for officers' stables, for the sum of £37,720; and on the 29th of March, the tender of Messrs. A. and G. Holme, of Liverpool, was accepted for the construction of 233 huts for officers' quarters, stores, guard-rooms, hospitals, &c., &c., for the sum of £25,907; and again, on the 24th April, the tender of Messrs. Holme was accepted for the supply of water to the camp (with the necessary works, pipes, tanks, &c., &c.), for the sum of £7,739 16*s.*, and £396 additional for arrangements to render the water and water-works available in case of fire, with an annual payment of £582 16*s.* for working and maintaining the same. On the 25th April, tenders were also accepted from several firms for the supply of officers' and soldiers' stoves, cooking stoves, privy trucks, &c., &c., amounting collectively to £8,486 11*s.* 1*d.* Although many other contracts, and numerous additional orders for works were entered into, the

above were the principal and most important ; and when it is considered that the Curragh, as a site for buildings of such extent, was comparatively unknown to the Royal Engineer Department—that, on the receipt of the instructions, the face of the country was covered with snow, rendering it doubly difficult to select a site for a camp, which could not, like one of canvas, be afterwards shifted at pleasure—and further, that the instructions came at a period requiring the utmost departmental exertions over the whole command, both for the ordinary duties, and extraordinary, consequent upon the embodying of the militia—and also, that the contractors experienced considerable difficulty in obtaining the requisite force of artificers and labourers, as well as the means of transport for their materials—much credit is due to all concerned, that by the 18th of March the works commenced, and by the 9th of July, 1855, accommodation, to the extent of 5,000 men, was fit for the occupation of troops.

Superintendence.

The general designing, preparation of working drawings and specifications, plans of position for the huts, formation of contracts, &c., together with all the administrative proceedings, were carried out in the office, and under the direction, of the Commanding Royal Engineer in Ireland, Colonel A. Emmett, R.E.*—succeeded by Colonel Cowper Rose, R.E., in May—assisted by the Assistant Adjutant-General, Lieutenant-Colonel Lugard, R.E., and the Deputy Surveyor, Mr. Sands ; the office of the District Commanding Royal Engineer, in Dublin, being made the record office only.

The local superintendence was most ably carried out under Captain Rich, R.E., who was selected for the duty, and was assisted by Lieutenant the Honourable W. Le Poer Trench, and the following civil branch :—Mr. Constable, Clerk of Works ; Mr. Butler, Foreman of Works, whose health, however, failed, and caused his removal on the 11th September ; Mr. Dobbin, Clerk of Works, principally employed with Deputy-Surveyor in Dublin ; and Mr. Bergin, Mr. Patrick Farrell, and Mr. M'Loughlin, temporary Foremen of Works. And it is satisfactory to be able to record that such extensive contracts, in so isolated and distant a position, presenting many serious difficulties during the operations, were carried to a successful conclusion ; and that while due regard was had to the public interests, in economy of expenditure, and by insisting upon the supply of good materials and workmanship, the contractors were treated with impartiality and leniency, and all claims were adjusted with an avoidance of either legal difficulties or complication of accounts.

Vide Letters from Contractors, pages 34 & 35.

Much of the early success of the operations was due to the responsibility undertaken by the Commanding Royal Engineer in the issue of advertisements for contracts, the receiving, opening, and immediately declaring the acceptance of tenders, and as promptly setting the contractors to work—a course of proceeding that was of course directly reported to, and met with the invariable approval of, the Board of Ordnance, then in existence, but under course of change into a War Department.

* Colonel Emmett, R.E., retired from the service with the rank of Major-General, on the 21st of May, 1855.

General arrangement of huts, &c., in formation of camp.

In the general arrangement of a permanent camp, to be constructed almost entirely of wood, it was considered important to combine the following requisites, viz.: the separation of regiments in their discipline, recruit and punishment drills; good regimental police arrangements; facilities for the assembly of the troops on ordinary occasions, and general parade; and the avoidance, as far as practicable, of the risk of extensive loss from fire.

The huts are distributed in a series of squares, ten in number, for 1,000 men each, placed thirty yards apart, seven of them being constructed with all the necessary requirements for two regiments averaging 500 men each. These squares have an interior space of 380 by 360 feet, on which the regimental training of recruits, and company drills, &c., &c., take place. There are entrances (front, ninety feet; rere, sixty feet) on two sides of the squares; and, for the purpose of checking the spread of fire, the other two sides are divided by huts built either of iron, lined with wood, or with brick walls and iron roofs. Down the centres of the spaces which separate the squares, sod fences, eight feet high, are constructed, with a view of cutting off one square from another, to facilitate the police regulations, and, as a further precaution against fire, the ends of these sod fences are revetted or protected by brick piers.

The officers' quarters, &c., are on a line advanced 120 feet in front of each square; and the soldiers' outbuildings are retired fifty feet in the rere. The front and rere roads or camp streets, run along the spaces so formed.

The general lay of the camp is east and west, fronting to the north. The left division for 5,000 men occupies the elevated ground known as the Long Hill, the site of encampments some fifty years ago; and the right division extends considerably further to the east. The squares forming the left division are in regular line and distance, and are placed upon the southern slope of the hill, the officers' quarters, &c., being upon the brow, and the soldiers' outbuildings on the slope below the squares. The ground in front of the officers' huts, and extending for a considerable distance to the west, forms a splendid and nearly level general parade of about a mile in length, immediately in front of the division.

Between the left and right divisions the ground, for about 230 yards, is somewhat more elevated, and of uneven surface. On this space the staff officers' huts, brigade offices, churches, clock and water tower, military police, post-office, and other requirements for general purposes, are placed.

Three of the squares of the right division occupy the ground to the east of this central assemblage of buildings. They are on a line parallel with those forming the left division, but are advanced 250 feet further to the front. A small valley, about 180 yards broad, divides these three squares from the remaining two,which break the general line by their right being thrown forward about 100 yards. The natural slope here obliges the squares to occupy the northern aspect, and to slope from rere to front, which has not, however, produced the slightest inconvenience.

The position of the head quarters and staff of the General Commanding is on a gentle elevation on the right, advanced about 300 yards from the troops, and commanding a view along nearly the whole line of front.

The hospital for the left division is on its extreme left, and is placed with the general hospital, in an enclosure called the Hare Park; that for the right division is immediately in its rere; the total accommodation being for 432 patients in the regimental hospitals, and forty-eight patients in the general hospital for contagious diseases.

The Barrack stores and Department, Royal Engineer Park and Establishment, also the coal and straw stores, and Commissariat bakeries (one of each to each division), Chaplain's and Commissariat officers' quarters, racket and ball courts, stables for Military Train, market, &c., &c., are situated on lower ground to the rere of the camp, facing the south, and the butchery is on the low ground to the extreme east of the camp, known as Donnelly's hollow.

In continuation of the left division, stabling for fifty horses, with gun-sheds, stores, &c., for a demi-battery of artillery, has been constructed under a subsequent authority; but the officers' quarters and men's huts for that additional force have not yet been authorized.

The water-works, with reservoir, &c., are placed a few hundred yards in front of the right division; and at the northern boundary, near the road from Newbridge, and the southern boundary in rere of camp, small depots have been constructed for Constabulary, of which an additional force became necessary, to maintain the due observance of the civil law. A court-house, and quarters for a resident magistrate have also been provided.

There are six ranges with butts for ball-practice, varying from 300 to 2,000 yards, one being for artillery practice, having heavy guns and mortars in position. They are towards the south-eastern boundary of the Curragh, but contiguous to the camp.

Roads of approach from the most important outlets of the Curragh have also been formed; towards Newbridge to the north—Athgarvan and Kilcullen to the east—Brownstown and Athy to the south—and Kildare to the west.

The general plan of the encampments, and the arrangement and appropriation of the huts in the squares and other principal blocks of buildings, are shown on the map and plans prepared by the Ordnance Survey Department.

Character of the huts, and accommodation provided.

The huts, with a few exceptions, are constructed of American white fir timber, deals and battens, of the first quality, excepting the sleeper-sills, door-posts, angle-posts, heel-posts and their sills, which are of the best Memel, Dantzic, or red pine. The joiners' work, including the floors and boarding, was cut out of deals or battens, when not otherwise directed. The huts are framed, weather-boarded, and lined; the roofs being boarded and covered with asphalted felt, coated with tar, sand, and lime; and the walls are payed over with mineral paint externally. Each site is levelled, brick footings are provided, and a space of five feet all round is coated with five inches of broken stones and gravel.

The size common to nearly all the huts may be quoted at 40 by 20 feet. The soldiers' hut forms but one apartment, appropriated for twenty-five men, and is furnished with the

usual iron bedsteads, and warmed by a Canada stove in the centre. The officers' huts are divided into eight small rooms, about nine feet square, with centre passages, and porches at either end for shelter to the end rooms. Porches are also constructed to all doors exposed to the north. The serjeants' huts are divided into six apartments—one half into four rooms similar in size to the officers' quarters, the other half into two rooms. The huts for married soldiers are similar to those for the officers; of these there are, at present, but two to each square, giving accommodation to sixteen per 1,000 men, instead of the now apparently authorized rate of six per cent. All huts for officers, non-commissioned officers, and married people, are provided with brick fire-places, open grates, and fenders, to act as fire-screens. The field officers' huts are longer than the others, and are so divided as to give each field officer either two rooms about 17 feet 6 inches by 10 feet, or one such room, and two about 10 feet by 9 feet 6 inches.

The officers' mess-rooms are 50 feet by 20 feet, each having an anteroom, and excellent kitchen, pantry, store, scullery, and mess-man's rooms attached, and a verandah along the front and end; also detached cellars for wine, beer, and coal.

The soldiers' cooking huts are of corrugated iron, with flagged floors, and the cooking is performed by stoves, each stove being provided with boilers, steamers, and a small oven, and designed to cook for forty men; a surplus number was provided, there being two cooking huts having sixteen stoves in each for every 1,000 men. It was subsequently found that these stoves could be fitted with vessels double the size, and cook for eighty men.

The ablution huts are fitted similarly to those in permanent barracks, but with wooden benches, &c., instead of slate.

The latrines are all divided into compartments, with small doors, so hung as to allow the feet of occupant to be seen from the passage. Cast-iron trucks run under the seats on rails to receive the soil, which is kept deodorized by means of peat charcoal. They are emptied as required, by running out the trucks and discharging their contents into covered carts. The soil is removed to a depot selected for the purpose at a distance from the camp, and there mixed with the ashes, refuse straw, &c., and sold by the contractor as manure.

Ventilation

The ventilation of the wooden huts was easily accomplished, their construction rendering it difficult to exclude the ingress of too much air. The soldiers' huts have openings in the ceilings, and ventilators on the ridges of the roofs; and besides the windows in the side walls, others are placed over the doors in each gable, hung on pivots, to afford both additional light and means of ventilation. The walls are weather-boarded externally and internally; but the latter is reversed, so as to afford a better protection to the soldier from draughts, and to retain the lime-wash, and cause it to run into the laps, in case it should be necessary to resort to such a means of destroying vermin. Ventilators are also provided to all the brick chimneys of other classes of huts, and to the ceilings of apartments; but, as before remarked, the shrinking of the lining boards affords free egress for the heated air into the roofs which, throughout the camp, are provided with ridge ventilators.

The extent and character of the accommodation provided for the troops, staff, and several departments, is more fully detailed in the list of huts and plans attached to the Narrative.

Canteens.

The system directed to be adopted with respect to shops and canteens was that of private competition. Four applicants, whose testimonials gave best promise of their proving honest traders, were selected, one for each brigade, who were permitted to erect, at their own cost, and on the sites pointed out to them, any extent of premises they considered necessary for their retail trade, as brigade suttlers. No rents were demanded, but agreements were entered into, embracing such regulations as were deemed requisite to preserve due command over their occupation, and the discipline of the troops.

The troops are in no way restricted in their choice of these brigade suttlers, but may resort to which they please, and deal with whoever supplies the best article at the most reasonable price.

Besides these suttlers, each square is provided with a small regimental canteen, built at the cost of the Government, in which the commanding officers place such persons, as canteen keepers, as they consider eligible, who are free of rent, but subject to the usual regulations, and forbidden to sell spirits.

Supply of water, and its adaptation in case of fire.

One of the most important features in the requirements of a camp, and to be considered in taking up a position for the occupation of troops, beyond a halt of the most temporary duration, is a plentiful supply of pure and wholesome water. The general impression, from careful inquiries, was, that water could not readily be obtained—that the difficulty of procuring a sufficient supply of that necessary of life caused very great inconvenience in former encampments on the Curragh, and finally led to its abandonment as a site for the assemblage of troops. The first steps taken were to search the locality, to test the depth and efficiency of neighbouring wells, and to sink experimental wells at the site of the camp. The early promise of these measures was not satisfactory; and considering the enormous consumption and waste of water by 10,000 infantry, their departmental establishments and camp followers, together with the absolute necessity for a great command of water in case of fire in a camp composed of such inflammable materials, the subject became one of the deepest importance and of much anxiety during the early stage of the operations at the Curragh. Wells, such as those already in existence, would, it was feared, result in much labour to the troops; require to be very numerous over a camp nearly two miles in extent; and, from the gravel formation of the district, produce at best but an uncertain supply. The information, however, upon which the Commanding Royal Engineer placed most reliance was that derived from Mr. Griffith, Chairman of the Board of Public Works, a gentleman most competent to afford an opinion upon the subject, and who was firm in the opinion that an inexhaustible supply would readily be obtained by sinking a deep well on the Curragh. With a view of throwing the subject open to public competition, an advertisement, calling for tenders for the supply of water to the camp, and giving an estimate of the quantity required, was inserted in the newspapers, and, at the same time,

a mode of obtaining it from the river Liffey, distant about two miles, at a lower level of about 100 feet, was sketched out. This proposal was to raise and filter the water into a large reservoir, from whence it was to be forced to the camp, and received in 10,000 gallon tanks, thirteen in number. The result of the advertisement was the receipt of eight tenders: five to raise water from the Liffey, two undefined, and one, from Messrs. A. and G. Holme, to gain the supply by means of a deep and extensive shaft to be sunk upon the Curragh, in the vicinity of the camp. In the consideration of these tenders, it was necessary to bear in mind the vested rights of the mill-owners upon the river Liffey, and the difficulties ever attendant upon an interference with their interests; the probability of the river water not being at all times free from bog-water and other impurities; the great distance the pipes would have to be laid through private property; and the considerable lifting power required to overcome the difference of level and great extent of friction. These considerations, together with the result of the trial well-sinking, and the confidence reposed in the opinion of Mr. Griffith, induced the acceptance of the tender of Messrs. Holme, and the success which has attended the operation of those gentlemen has been all that could be desired.

The site selected for the works was a natural hollow in front of the camp, where a superficial layer of clay existed, favourable for the formation of a reservoir, and which afforded the prospect of obtaining water with the least amount of sinking. At a depth of fifty-four feet, the flow of water overcame the temporary pumps and steam power used in the progress of the work, tested by continuous pumping at the rate of about 200,000 gallons a-day for three consecutive days, and it has since proved itself inexhaustible, and productive of a never-failing abundance of pure wholesome water, fit for all domestic purposes, and delicious to the palate. The excavation was through gravel and sand in strata of varied coarseness, and the water was first obtained immediately below a bed or plate of conglomerate of great hardness, with a water-worn surface on its lower face. On reaching water the sinking was continued through fine sandy gravel and occasional layers of conglomerate, until the power of the temporary engine and pumps was unable to keep the supply under. The steening was built with Welch fire-brick, laid in cement on a cast-iron curb, the well being ten feet diameter. The pumping machinery is composed of two oscillating engines, each 8-horse power; two cast-iron lifting pumps, 8½-inch diameter, with 18-inch stroke; and four brass barrel 8-inch force-pumps, 12-inch stroke, for driving the water from the reservoir through the 6-inch and 4-inch mains to thirteen tanks, one for every square and principal block of buildings, each capable of containing 10,000 gallons, and fitted with stop-cocks, taps, and screw-valves for fire-hose. The distribution from the tanks is by 2-inch branches. A fountain, fitted with a double tap and iron ladle, is placed in each angle of the squares and other convenient situations. Messrs. Holme evidently took much interest in their work, and obtained the best materials, castings, machinery, and workmen, necessary for their purpose; and the distribution of the water throughout the camp is in the utmost profusion, and arranged with more than the ordinary convenience of permanent stations.

A further insight into this contract, the measures adopted, and the detail of the operations, with their successful result, will be gained from the plans attached, and the Report of Mr. Forsyth, Civil Engineer, who inspected and reported upon the works at the request of the Commanding Royal Engineer, under the authority of the War Department.

Arrangements in case of fire.

The peculiar character of the encampment, constructed almost entirely of wood, with roofs covered with felt, saturated with tar, rendered the most careful precautions necessary to guard against accidents by fire; and every means that could be devised were provided for rapidly extinguishing fire, and guarding against the risk of a conflagration that might overcome all efforts to arrest its progress. Some of the precautionary measures have already been alluded to, such as the arrangement of huts into hollow squares, ninety feet apart, on an extended line, having a sod fence, eight feet high, down the centre of each interval; also the division of the wooden huts of each square into smaller blocks, by the construction of iron, or brick and iron huts, on the two sides; and by wide roadways for front and rere entrances to the interior spaces or parades. In addition, five fire-engines, with all their appurtenances, and a large quantity of spare hose, wound upon proper travelling reels, together with a good supply of fire-annihilators and fire-screens, are housed in appropriate positions about the camp, and are placed under the charge of an officer of the Royal Engineers, having the designation of "Fire Master," who is assisted by a non-commissioned officer, as "Assistant Fire Master," and a few men from each regiment in camp, permanently attached, and suitably dressed to form a Fire Brigade. And in order to insure a ready and overwhelming command of water, fire-plugs have been fixed, with triple orifices, in the centres of the squares, and single fire-plugs have been attached to the tanks, and placed in other suitable positions, and the machinery of the water-works is kept in constant readiness to drive water through the mains, or fill the tanks, as the case may require. Means are also provided at the central or valve tower for shutting off the connexion with the tanks, and for closing the mains of the right and left divisions, so as to confine the operations of the water-works to the site of the fire, turning them, in fact, into a powerful fire-engine capable of working hose attached to the mains, and of throwing water sixty feet above the surface, from so many adjacent points, that, assisted by the fire-engines, and the great command of disciplined labour, great hopes of extinguishing any fire, prior to its spreading into a general conflagration, may reasonably be entertained. A copy of the Camp Regulations on this and other general duties is attached.

Drainage.

The geological formation of the Curragh district being gravel, with a very moderate covering of soil, the natural drainage is most complete and rapid, the surface water disappearing immediately, even during the continuance of much rain; and in no spot, with the exception of one or two small hollows where a top layer of clay is found, did the water continue to remain beyond a few hours. This continued subdrainage rendered the surface soil and turf very porous, and gave to it a most delightful elasticity, and led to the idea that nature would herself afford a system of drainage almost equal to the wants of the camp; but notwithstanding that two lines of rail were laid by the principal contractors, the continued traffic of carts with material, &c., for the formation of the camp, particularly

during the wet weather, so cut up the surface, and the trampling of the workmen so puddled it, as entirely to destroy its porous nature, and at one period to render the temporary roadways and sites for the buildings nearly impassable from the mud and water retained on the surface. A system of permanent drains was, therefore, laid out, and a contract was entered into with Mr. John Conolly for the performance of the work for £6,843. The drains are of brick, covered with flagging, and have weep-holes left at very small intervals in the sides, with a view of acting as land-drains throughout their length. The system adopted for the outlets (there being no river or natural outlet within reasonable distance) was to terminate each main drain with a cesspit, to admit of the first subsidence of the more solid particles, from whence the overflow passes into and through a filtering chamber, and discharges into a well sunk until water was obtained, and its supply sufficient to overcome the common process of well-sinking. This principle was adopted in the hope of the natural outlets for the subsurface waters of the district being sufficient, during ordinary times, to carry off the accumulation of waters from the drains, escapes being provided to permit of the overflow of the wells spreading over the surface of the Curragh when heavy rain, or an extraordinary rush of water through the drains should overcome the steady process of escape supplied by nature. In the first instance, this principle was not carefully carried out. The filterers and wells were not constructed sufficiently apart, or steened with sufficient strength; hence the sides fell in; the drainage deposit added to the failure; and the drains discharged their contents, with all their impurities, upon the surface of the Curragh, creating a decided nuisance. A reconstruction of the filterer, cesspit, and well, at one of the outlets was afterwards effected, which has proved partially successful; but this system has proved insufficient, particularly the cesspits in the low levels, and other measures are being adopted. Care has been taken that the drainage outlets are so situated, and at such a distance from the water supply, as to preclude the possibility of affecting its purity.

Roads.

The natural tenacity and elastic property of the fine old sward covering the surface of the Curragh long resisted even the great traffic during the formation of the camp; but it was from the first evident that roads must be constructed and camp-streets formed; and the only reason for delay was a doubt whether such work might not be postponed until the occupation of the camp, and then be performed by the troops in order to instruct them in the use of the pick and shovel, the necessity for which the siege operations in the Crimea gave sufficient evidence. But the inconvenience occasioned to the first occupants of the camp from the want of roads, and the extra cost incurred by the Government from the great labour and expense of carting coals and stores for the Barrack department, was subsequently found to render such a course inexpedient. On the 6th of September, 1855, advertisements were issued for the construction of roads; and on the 24th of the same month, the tender of Mr. A. Toole was accepted for the formation of about ten miles of road for the sum of £2,946, not including cuttings, which were to be measured and paid for in addition at fixed prices. It was soon evident that this contract would prove a losing

one to the contractor; and on the 30th November, 1855, he abandoned the work, and threw himself upon the mercy of the Government. As the necessity for the roads was immediate, and winter fast approaching, the superintending officer, Captain Rich, R.E., very properly took upon himself to retain all the labourers, horses and carts, gangsmen, &c., discharged by Mr. Toole, reporting his proceedings, and requesting authority to continue their employment by the department on day-work, either until the completion of the roads, or until a fresh contract was obtained. The working of the men as day-labourers, supplied with implements from the store of intrenching tools, and paid by an Ordnance clerk appointed for the special duty, proved so satisfactory that its continuance was authorized throughout the whole road-making; and also for the construction of the butts and rifle-ranges, six in number; and the result has afforded most excellent roads, at an apparent cost of £1,100 over that which the same extent (including cuttings and extra pathways, &c.,) might have cost under the strict terms of Mr. Toole's contract, but £1,200 less than the tender next lowest in reply to the September advertisement.

Magazines. No buildings are provided in the camp as magazines, as it was considered sufficient, and more in character with its object, to employ for that purpose the ammunition-carts usually accompanying an army in the field.

The amount of ammunition for which storage could at any one time be required was calculated on the spring allowance for practice, viz., sixty rounds per man of ball, and forty rounds of blank cartridge, together with a probable extra allowance of fifty rounds per man for field days, the same as granted for the Dublin garrison, making a total for the 10,000 infantry of 600,000 rounds of ball, and 900,000 rounds of blank cartridge, irrespective of the sixty rounds of ball per man as service ammunition for their pouches.

The carts on the average were calculated to contain 12,500 rounds each, but, to afford the requisite regimental distribution and charge, the militia regiments being usually small in numerical strength, it was considered that ninety-five carts would be required for the spring allowance of ammunition; and for the 500,000 extra rounds, that an additional half-dozen carts would be sufficient, as the supply could be sent in instalments from Dublin as required.

The subsequent determination to station Artillery at the camp, and to supply them with heavy guns and mortars, with ammunition for practice, rendered a further supply of carts necessary; but, as their powder is generally supplied in barrels, with empty cartridges, to be filled on the spot as needed; and as the supply could be sent to the Curragh from Dublin in small quantities, a store of 100 barrels, holding 100 pounds each, was deemed sufficient magazine accommodation for that service, for which twenty more carts were provided, making a total of 121. These ammunition carts are parked in front of the camp in double rows, divided by earthen banks raised as traverses, and the whole is surrounded with *chevaux de frize*, and guarded by sentries. They have proved themselves perfectly efficient as magazines, no complaint having been made as to damage of ammunition, although the carts are exposed to the weather winter and summer.

It was calculated that to provide brick buildings as magazines would cost about £1,400, if erected in two blocks, each containing ten small magazines ; and in addition, that £320 would be required for a separate magazine for Artillery purposes.

Remarks resulting from the experience gained in carrying out the foregoing operations,&c.

A few remarks in conclusion respecting the result of the experience gained in the progress of the works, and since the occupation of the encampment, will not be considered out of place.

The first reflection which naturally occurs is one of regret that this extensive amount of accommodation for troops was not constructed of more permanent materials; but it is necessary to bear in mind that the camps in England, as well as at the Curragh, were first called into existence by the exigencies of the service in a time of war, when the embodiment of the militia pressed for a large amount of barrack accommodation, and the necessity for training troops in large bodies became apparent. The first idea, probably, was to provide shelter for the soldier somewhat superior to that afforded by canvas tents in a humid climate, but with no view to a more permanent occupation than was absolutely necessary for the training and requirements of the army during the continuance of the war—views which would appear, however, to have been enlarged upon during the early progress of the camps first undertaken. Hence the adoption of wood, and other but too temporary and perishable materials, in the construction of these military towns ; for neither could the amount of bricks have been obtained, nor the quarters have been erected of masonry, within any reasonable period, or with sufficient rapidity, to meet the primary object of the measure.

In the construction of the huts each was provided with a brick foundation, and every precaution was taken to preserve the materials, as far as possible, from decay ; and although, during the war with Russia, it was necessary to use inferior timber to the Baltic produce, yet the best of each kind was specified for and obtained. The foregoing reasons also necessitated the use of stoves instead of brick fire-places, as the means of warming the huts. In the soldiers' rooms they were found to answer very well, and to warm them better than open grates ; the floors and roofs were guarded from contact with the heated iron ; and these stoves continue in use. In the officers' huts, however, divided into eight small rooms, each provided with a small stove, it was soon discovered that brick fire-places must replace the stoves, notwithstanding the partitions were protected by sheet-iron fixed so as to be an inch distant from the wood. Several accidents at Aldershot, and one at the Curragh, were followed by immediate authority to substitute the brick chimneys for the stove and pipe, to all officers' huts, and others similarly divided ; and greater safety, as well as comfort to the occupants, has resulted.

The early plans of the officers' and soldiers' huts are defective, affording insufficient space for the numbers they were designed to accommodate. Those more recently constructed, both at the Curragh and at the English camps (particularly at the small hutment at Chatham), are greatly improved in that respect ; but at least double the accommodation should be afforded to the regimental officers, and huts should also be provided in liberal

proportion for occupation by married officers, if these camps are to be regarded as barracks, and the troops are to remain in permanent occupation of them as quarters. The full supply of huts for married soldiers, viz., six per cent., should likewise be completed, as they will confer the double benefit of affording decent accommodation to the married men, and reduce the occupation of the soldiers' huts to a more fitting proportion ; which should be twenty men per hut instead of twenty-five. A larger proportion of separate quarters for serjeants is also requisite to meet the recommendations of the Barrack Committee. And places for the amusement and recreation of both officers and men should be liberally provided ; such as billiard-rooms, skittle-alleys, and some large assembly-rooms, designed so as to be convenient for lectures, concerts, theatricals, or ball-rooms.

The system adopted for the canteens and suttlers for this camp, by bringing competition into the market, is good in principle, but the regimental canteens, if viewed as a permanent measure, are too small, and the comfort of the non-commissioned officers and men is in consequence curtailed.

The original design of the huts provided weather-boarded covering for the roofs, having a steep pitch, with each board nailed to the rafters above the two-inch lap, so as to permit of shrinkage, and lessen the chance of rending—a method adopted with considerable advantage in the walls also—and that the whole should be coated externally with mineral paint. During the progress of the work it was considered expedient to add a covering of patent asphalted felt, as a further protection. The felt covering was, therefore, added to those huts already weather-boarded, first planing off the arris ; and as the contractors represented that their material would last better on close boarding, the roofing was continued without any lap, the boards being placed edge to edge alternately, which, as the whole of the material had already been cut feather-edge, according to the original order, produced an undulating surface instead of the decided edges.

The felt has not proved a sufficient protection against leaks ; and the repeated coatings of tar, &c., drop from the eaves in hot weather, and produce inconvenience. Experience shows, therefore, that when used, the felt should be laid upon close-boarded roofs, nearly flat; and the walls of huts so roofed should have additional height, and means for ventilation. The best description of felt only should be used.

It may be well, however, to remark, that prior to the commencement of the Curragh camp, temporary stabling for 100 horses was erected in Portobello barracks, Dublin, having roofs covered with weather-boarding only, coated with mineral paint, and whitewashed externally. These roofs have proved stanch without the felt covering, and there have not been any complaints since they were finally finished.

In one or two of the huts an experiment has been tried, by filling the walls between the outer and inner boarding with concrete (composed of five parts screened gravel, $\frac{3}{4}$-inch diameter, one part sharp sand, and one part fresh pounded lime), with the view of increasing their solidity, and rendering them warmer in winter and cooler in summer, less conducive to the passage of sound, and somewhat less inflammable. The cost would be about

£4 6*s.* 9*d.* for the soldiers' huts ; £7 7*s.* 4*d.* for the officers' quarters, including all interior partitions, with £2 in addition for the larger huts.

Some doubt upon the full benefit anticipated exists, from a fear that the huts would be rendered more liable to damp, consequent upon closing up the ready means of escape the hollow walls afford to exhalations from the earth ; but it is considered that, either by leaving the partitions hollow, and concreting the outer walls only, or by otherwise providing free ventilation under the floors, with occasional flues in the walls, no evil, but much benefit, would result from the measure.

In a camp so amply supplied with excellent water, it was considered unnecessary to provide any means for securing the vast quantity of rain-water which might have been accumulated from so large an extent of roofage ; nevertheless, the addition of eave-gutters and trunks to all the huts would be beneficial for the purpose of lessening the amount of soakage about the foundations, and the inconvenience at times experienced from the dropping of tar from the roofs. The high position and nature of the soil, however, prevents any long continuance of damp after rain ; and the want of a free, natural outlet for drainage has rendered it far from desirable to increase the rush of water through the drains.

APPENDIX.

LIST OF HUTS AT THE CAMP, CURRAGH OF KILDARE,
showing their Appropriation, Size, and Cost.

Denomination and Appropriation.	External Dimensions.				Situation. A Square.	B Square.	C Square.	D Square.	E Square.	F Square.	G Square.	H Square.	I Square.	K Square.	Hospitals.	Provost Establishment.	Head Quarter Staff.	Divisional Staff.	Barrack Department.	Commissariat Department.	Royal Engineer Department.	Chaplains.	Civil Police.	Centre of Camp.	Land Transport.	Total Number.	Contract Rate, each.			Actual Cost, each.		
	′	″	′	″																							£	s.	d.	£	s.	d.
Commanding Officer and 2 Field Officers,	61	2×21	2		2	1	1	1	2	1	1	1	1	1	3	.	.	1	1	1	1	.	.	.	.	19	209	0	0	215	15	0
2 Field Officers,	40	2×21	2		.	.	.	.	.	1	1	1	1	1	.	2	4	4	.	.	5	2	1	.	.	23	148	10	0	153	4	6
8 Officers,	38	6×21	2		6	5	5	5	6	6	6	6	6	6	.	.	.	.	5	.	.	.	.	.	.	62	171	0	0	176	17	0
Officers' Mess Establishment,	108	0×21	2		2	1	1	1	2	2	2	2	2	2	.	.	.	.	.	.	.	.	.	.	.	17	285	0	0	297	15	0
Do. Wine and Coal Cellars,	22	6×21	2		1	1	1	1	1	1	1	1	1	1	.	.	.	.	.	.	.	.	.	.	.	10	111	6	0	111	6	0
8 Officers' Servants,	38	6×21	2		3	2	2	2	3	2	2	2	2	2	9	.	3	4	.	.	2	.	.	.	.	40	171	0	0	176	17	0
Officers' block of Privies,	22	6×21	2		1	1	1	1	1	1	1	1	1	1	2	.	1	2	.	.	.	1	.	.	.	16	76	0	0	79	16	0
Small do., full size,	11	6× 9	3		1	.	.	.	.	.	.	.	.	.	.	2	1	.	3	.	3	.	1	.	.	11	40	13	2	40	13	2
Do. do., half do.,	9	3× 6	0		.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	4	1	1	2	.	.	10	22	16	7	22	16	7
Officers' Stables, 7 horses,	39	2×21	2		3	1	1	1	2	2	2	2	2	2	2	2	3	3	1	3	1	1	2	.	.	36	83	0	0	86	6	4
Do. Forage Stores (iron),	39	2×21	2		.	1	.	1	1	1	1	.	.	1	.	.	1	2	.	.	1	.	.	.	.	10	114	0	0	119	14	0
Do. Forage Barn,	81	2×21	2		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1	260	0	0	275	12	0
Store and Larder,	22	6×21	2		.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	50	0	0	50	0	0
First-class Staff Hut,	68	2×21	6		.	.	.	.	.	.	.	.	.	.	.	.	2	2	1	.	1	.	1	.	.	7	472	10	0	472	10	0
Hut for P. M. Officer,	40	8×21	2		.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	1	224	0	0	330	0	0
Huts for 8 Staff Serjeants,	38	6×21	2		1	1	2	2	1	1	1	1	1	1	.	.	.	.	.	.	.	.	.	.	.	12	216	5	0	216	5	0
Huts for 4 Staff Serjeants, with Mess-room and Kitchen,	39	2×21	2		2	1	1	1	2	2	2	2	2	2	.	.	.	.	1	3	.	.	.	.	.	21	167	0	0	171	16	0
Serjeants' Mess Establishment,	31	2×21	2		1	1	1	1	1	1	1	1	1	1	.	.	.	.	.	.	.	.	.	.	.	10	89	12	1	92	18	1
	16	8×14	0																												
Huts for 25 men (wood),	39	2×21	2		36	36	36	36	36	36	36	36	36	36	.	.	.	.	2	2	.	.	.	.	.	364	83	0	0	86	6	4
Do., spare, for 25 men (wood)*	39	2×21	2		.	1	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	83	0	0	86	6	4
Do., do., do., (iron)	39	2×21	2		4	4	4	4	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20	151	0	0	157	0	0
Do., do., do., (brick)	39	2×21	2		.	.	.	.	.	4	4	4	4	4	.	.	.	.	.	.	.	.	.	.	.	20	111	18	0	117	18	0
Do. (wood, with iron roof),	39	2×21	2		.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	6	.	.	.	.	.	8	131	0	0	136	4	9
Cooking, 16 Stoves in each,	39	2×21	2		2	2	2	2	2	2	2	2	2	2	2½	.	.	.	.	.	.	.	.	.	.	22½	114	0	0	119	14	0
Ablution Rooms,	39	2×21	2		2	2	2	2	2	2	2	2	2	2	.	.	.	.	.	.	.	.	.	.	.	20	105	10	0	110	15	6
Soldiers' Privies,	39	2×21	2		2	2	2	2	2	2	2	2	2	2	2	.	.	.	.	.	.	.	.	.	.	22	135	0	0	141	15	0
Non-Commissioned Officers' and Women's Privies,	22	6×21	2		1	1	1	1	1	1	1	1	1	1	1	.	.	.	.	.	.	.	.	.	.	11	77	0	0	80	15	0
Urinals,	39	2×21	2		2	2	2	2	2	2	2	2	2	2	.	.	.	.	.	.	.	.	.	.	.	20	89	4	8	89	4	8
Guard-rooms, with 4 Cells,	47	10×24	2		3	2	2	2	2	2	2	2	2	2	.	.	.	.	.	.	.	.	.	.	.	21	119	0	0	124	19	0
Tailors' and Shoemakers' Shops,	39	2×21	2		2	1	1	1	2	1	1	1	1	1	.	.	.	.	.	.	.	.	.	.	.	12	70	0	0	73	10	0
Library,	39	2×21	2		2	1	1	1	2	1	1	1	1	1	.	.	.	.	.	.	.	.	.	.	.	12	83	0	0	86	6	4
Orderly-room, with Pay-office, and Officers' Guard-room,	39	2×21	2		2	1	1	1	2	1	1	1	1	1	.	.	.	.	.	.	.	.	.	.	.	12	152	0	0	155	6	4
Bread and Meat Stores,	39	2×21	2		2	1	1	1	2	1	1	1	1	1	.	.	.	.	.	.	.	.	.	.	.	12	74	0	0	77	14	0
Quartermaster's Store,	39	2×21	2		2	1	1	1	2	1	1	1	1	1	.	.	.	.	.	.	.	.	.	.	.	12	83	0	0	86	6	4
Huts for 8 Married Soldiers,	38	6×21	2		2	2	2	2	2	2	2	2	2	2	.	.	.	.	.	.	.	.	.	.	.	20	149	1	6	149	1	6
Women's Wash Houses,	39	2×21	2		1	1	1	1	1	1	1	1	1	1	2½	.	.	.	.	.	.	.	.	.	.	12½	91	0	0	95	11	0
Regimental Sutlers,	39	2×21	2		1	1	1	1	1	1	1	1	1	1	2	.	.	.	.	.	.	.	.	.	.	10	168	19	8	173	15	3
Schools,	61	2×26	2		2	1	1	1	2	2	2	2	2	2	.	.	.	.	.	.	.	.	.	.	.	17	237	5	7	260	0	0
Wards, 12 patients,	31	1×21	2		.	.	.	.	.	.	.	.	.	.	16	.	.	.	.	.	.	.	.	.	.	16	66	0	0	69	6	0
Do., 24 patients,	61	2×21	2		.	.	.	.	.	.	.	.	.	.	12	.	.	.	.	.	.	.	.	.	.	12	120	0	0	126	0	0
Forge and Shoeing Shed,	39	6×19	2		1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	186	0	0	197	3	0
Armory, and Farriers' Workshop,	39	6×21	2		.	.	1	.	.	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	.	3	114	0	0	119	14	0
Straw & Barrack Stores (iron)	76	6×21	2		.	.	.	.	.	.	.	.	.	.	.	.	.	.	8	.	.	.	.	.	.	8	228	0	0	239	8	0
Do. (wood, with iron roof)	76	6×21	2		.	.	.	.	.	.	.	.	.	.	.	.	.	.	10	.	.	.	.	.	.	10	116	18	3	122	0	0
Gun Shed (iron),	71	6×25	6		1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	385	0	0	408	6	0
Troop Stable, for 50 horses,	127	10×28	2		1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	402	18	0	404	0	0
Infirmary Stable, for 5 horses,	35	2×21	2		1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	78	0	0	78	15	0
Loose Box Stable, for 2 horses,	21	7×21	2		1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	46	0	0	46	12	0
Harness-room and Store,	39	7×19	2		1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	88	0	0	89	0	0
Collar maker and Wheelers' Workshop,	31	7×21	2		1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	69	0	0	70	0	0

* Erected as Barrack and Bedding Stores; those in A and E appropriated as Libraries.

List of Huts at the Camp, Curragh of Kildare, showing their Appropriation, Size, and Cost—*continued.*

Denomination and Appropriation.	External Dimensions.	Situation. A Square.	B Square.	C Square.	D Square.	E Square.	F Square.	G Square.	H Square.	I Square.	K Square.	Hospitals.	Provost Establishment.	Head Quarter Staff.	Divisional Staff.	Barrack Department.	Commissariat Department.	Royal Engineer Department.	Chaplains.	Civil Police.	Centre of Camp.	Land Transport.	Total Number.	Contract Rate, each.	Actual Cost, each.
	′ ″ ′ ″																							£ s. d.	£ s. d.
Engine Houses,	21 2×21 2	1	.	.	.	.	.	.	1	.	.	.	.	.	1	.	.	1	.	.	.	.	4	39 0 0	39 0 0
Fire Annihilator do.,	21 2×21 2	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1	.	.	.	.	2	36 10 0	36 10 0
Do. do.,	21 2×10 0	1	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	2	20 0 0	20 0 0
Bake Houses (wood, iron roofs)	43 8×42 0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	2	407 0 0	427 0 0
Slaughter-house,	50 2×19 6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1	225 0 0	236 5 0
Cattle-house,	37 6×19 6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1	83 0 0	87 3 0
Sheep-house,	37 6×19 6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1	90 10 0	95 0 0
Churches,	114 2×63 8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	2	2,253 0 0	2,668 2 6
Ablution and Bath-rooms,	31 6×21 2	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	3	141 2 9	141 2 9
Dead Houses,	21 2×21 2	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	3	99 7 0	99 7 0
Hut for Butchers' men,	39 2×21 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1	132 0 0	132 0 0
Hay and Straw Store,	120 3×21 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1	192 0 0	192 0 0
Corn Store,	35 10×21 4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1	151 5 0	151 5 0
Coal Stores,	9 0× 7 0	.	.	.	.	.	.	.	.	.	.	.	.	1	10	1	.	10	.	.	.	.	22	4 0 0	4 0 0
Hut for Head Constable, and Cookhouse,	46 0×21 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1	151 0 0	152 10 0
Do. do., and 10 men,	46 0×21 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1	160 0 0	161 0 0
Hut for 17 Constables,	39 2×21 2	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	3	.	.	4	93 0 0	94 0 0
Small Cookhouses,	21 2×13 2	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	.	.	2	38 0 0	38 10 0
Court-house,	61 2×26 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1	339 5 0	339 5 0
Lock-up and Cells,	39 2×21 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	2	211 16 2	211 16 2
Waggon Shed,	81 2×21 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	128 0 0	128 0 0
Litter Shed,	74 4× 7 0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	27 10 0	27 10 0
Stable (40 horses),*	109 0×27 4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	243 16 10½	243 16 10½
Iron Shed, Barrack Utensils,	155 0×20 0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	349 6 8	358 0 0
Do. do. do.,	77 8×20 0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	174 13 4	179 0 0
Workshops,	160 0×21 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	1	154 8 0	154 8 0
Miscellaneous.																									
Waterworks. 10,000 Gallon Tanks (iron)	—	1	1	1	1	1	1	1	1	1	1	2	.	.	1	.	.	.	.	.	.	.	13		
Water Pipes, do.,	6 207/1760	Miles,		lineal,		of	2-inch,		3-inch,		4-inch	and	6-inch			diameter,							6 207/1760		
Fountains, do.,	—	4	4	4	4	5	5	5	5	5	3	1	1	.	2	4	1	1	.	.	.	.	58	10177 10 11½	10,177 10 11½
Wells,	—	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	2		
Fire Plugs,	—	2	2	2	2	2	2	2	2	2	2	2	.	.	.	1	.	.	.	.	.	.	23		
Water Troughs,	—	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1		
Dung Pits (sod),	—	2	1	1	1	2	2	1	1	1	1	2	1	1	2	1	3	1	2	1	.	1	28	2 0 0	2 0 0
Ash Pits,	—	2	1	1	1	2	1	1	1	2	1	5	1	1	1	6	4	.	2	2	.	1	36	1 10 0	1 10 0
Drying-ground, with 12 posts,	—	1	1	1	1	1	1	1	1	1	1	1	.	.	.	.	.	.	.	.	.	.	11	5 6 0	5 6 0
Coal Yards,†	155 0×155 0 / 77 8×155 0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	2	—	—
Straw Bedding and Turf Yards,	196 0×100 0 / 120 0×100 0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	1	130 0 0	130 0 0
		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	105 0 0	105 0 0
Weighing Machine and Office,	—	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	58 0 0	58 0 0
Sentry Boxes,	—	.	.	.	distributed.																		100	5 15 0	5 15 0
Racket and 2 Ball-courts,	—	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1‡	.	.	1,631 15 0	1,700 0 0
Fire Engines,‡	—	1	.	.	.	.	.	.	1	.	.	.	.	.	1	.	.	1	.	.	.	.	4	—	—
Clock Tower,	—	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	750 0 0	735 0 0

		£ s. d.	£ s. d.
Fencing (wood),	2,285 yards, lineal,	1,410 0 0	1,410 0 0
Roads,§	10 miles of Roads, 30′ 0″ × 25′ 0″, and 20′ 0″ wide,	3,763 5 11	5,387 4 6½
Drains,	7 miles of Brick Underground Drains,	6,843 0 0	6,843 0 0
Stoves and Pipes,	2,025 of various sizes,	9,458 9 3	9,458 9 3
Sod Fencing,	1,500 yards, lineal,	600 0 0	600 0 0
Trucks for Soil,	466 of 3 sizes,	2,145 6 9	2,145 6 9
Ladders and Grappling Irons, in case of Fire,	2 Ground and 2 Roof Ladders to each Square and Department,	133 0 0	133 0 0
Asphalted Felt Roofs,	Over the whole Camp, 96,088⅘ yards, superficial,	4,384 4 3	4,384 4 3
Lamps and Posts,	345 over the whole Camp,	1,260 0 0	1,200 0 0
Butts for Minie rifle practice and for Artillery,	6 Butts, with ranges varying from 300 to 2,000 yards,	1,700 0 0	1,700 0 0

* Formerly Sutler's Hut.
† Enclosures formed by Store Buildings.
‡ Sent from Store.
§ This Contract was abandoned by the Contractor.

REGULATIONS FOR THE CAMP AT THE CURRAGH.

Guards.—1. The Barrack-guard will, by day, consist of one subaltern, one serjeant, one corporal, and eighteen privates (a quarter near the guard-room will be allotted for the officer on guard).

2. This guard will furnish sentries: one at the guard, one in front of the line of officers' huts, one at each entrance into the regimental lines, and one on each flank in the rear street. The sentries on the flanks of brigades may be increased, according to the position of the regimental camp.

3. The entrances into the camp will be on the flanks and along the front road; and the entrance into each square to be at centre passages, passing the guard-hut from the front street, and corresponding passages from the rear street; but no horses or carriages will be permitted to cross the general parade-ground from the cheveaux-de-frises to the huts, or *vice versâ*.

Passage to or from the squares through the intervals between the huts is not to be permitted.

Rear-Guard.—1. The Rear-guard, by day, will consist of a non-commissioned officer and twelve privates.

It will mount one sentry at the guard, one at the entrance into the square from the rear street, and two along the rear.

2. If extra sentries are necessary during the night, the barrack and rear guards will be reinforced from the in-lying picquets by the number of men required.

3. Sentries for the straw, fuel, barrack and commissariat stores, the hospitals, and ammunition, will be furnished, as may be found necessary.

4. The public will be allowed to circulate along the front of the line, and, during the day, through the streets, but not after tattoo.

5. With reference to the position of the camp and local circumstances, paroles and countersigns will not be required; but every sentry will, after tattoo, as usual, challenge all persons directly approaching his post.

6. No person (except an officer in uniform) is to be allowed to enter or pass out of the regimental lines, except at the entrances notified in these regulations. The sentries will receive instructions to direct strangers to the proper entrance.

7. No soldier is to be permitted to go more than one mile from his regimental lines, without a pass signed by the commanding officer of his corps.

8. Patrols will take up all soldiers, not on duty, whom they may meet beyond that distance, and who have not passes, and will lodge them with the nearest guard, to be escorted to the guard of their respective regiments.

9. The sutlers will be furnished with passes signed by the Assistant Quartermaster-General, which will admit them into the lines.

10. Civilians, wishing to visit and enter the camp, unless brought in by an officer in uniform, must apply to the officer at the guard.

11. All carts bringing baggage or provisions into camp will pass by the rear road and entrance; but carriages and horses may enter on the flanks by the street in rear of the officers' lines.

Provost-Serjeant.—1. The Provost-Serjeant, aided by an assistant provost-serjeant in each brigade, and a non-commissioned officer in each regiment, will be held responsible that the sutlers comply with such regulations as may from time to time be issued for the preservation of order.

2. Commanding Officers are requested to order that all requisitions for patrols from the provost-serjeant, or any of the assistant provost-serjeants, may be complied with.

3. Officers Commanding regiments will select intelligent non-commissioned officers for this duty.

Picquets.—1. Each battalion will mount an in-lying picquet, which will be considered ready for duty at all hours; and the Brigade-Major will give out, in Brigade orders, from time to time, the number of rank and file of which each picquet is to consist.

2. The in-lying picquets will be inspected, after the evening parade, by the Field-Officer of the day, and will remain accoutred in constant readiness to turn out during the night.

3. If it be found necessary that the huts should be guarded, the in-lying picquets will perform the duty; and it will then be desirable that the in-lying picquet should be formed of at least three rank and file from each company.

4. These men would, during the day, mount sentry with their side-arms over the huts of their respective companies, and perform the duties of a company's guard or watch.

Officers on Duty.—1. There will be a Field-Officer of the day for each Brigade, and a Captain of the day for each Battalion.

2 There will also be a Quartermaster of the day for each Brigade, who will visit all parts of the encampment, and report any defect or deviations in the police arrangements.

3. The Field-Officer of the day will have the command of the picquets within the lines of his Brigade, and be responsible that the police arrangements and the orders relating to the cleanliness of the camp are strictly attended to. He will give such orders as he may think necessary for working parties or otherwise to the Captain of the day of each regiment.

4. The Captain of the day and the Quartermaster will receive orders from the Field-Officer of the day, and also from the Commanding Officers of their respective corps, and be responsible for the police and cleanliness of their Brigades.

5. The Field-Officer and Captain of the day will continue on duty till relieved at guard-mounting.

6. The Captain of the day will prepare his report for the Field-Officer of the day half an hour before he is relieved.

7. A Medical Officer also will be detailed daily in each Brigade, who will always remain in the camp ready to meet any case of accident.

8. There will be five Fire-engines stationed in the encampment; and Officers Commanding regiments are directed to obtain a copy of the Fire Regulations, and make them known in their respective corps.

Parades and Roll-calls.—1. Regiments will be prepared to assemble for a march or field exercise between the hours of nine A.M. and twelve mid-day. Knapsacks will be packed, and greatcoats folded.

2. All guards will mount at ten, A.M., unless otherwise ordered.

3. When the Division parades for field exercise, the guards will not be relieved until after the men's dinners.

4. When the Division does not parade for field exercise, Colonels Commanding brigades will make such arrangements for carrying on regimental drill under their superintendence as they find necessary.

5. The time of regimental morning and evening parades will be regulated by Officers Commanding corps.

6. A gun will be fired by the Artillery at six A.M., at mid-day, and at nine, P.M. The last post will be at half-past nine, P.M., by which hour all the men must be in their huts.

Orderlies.—1. To insure a ready communication between all parts of the camp, and a prompt circulation of orders, an intelligent non-commissioned officer or private from each regiment will be attached to head quarters, acquainted with the huts of the Officer Commanding the Brigade, of the Brigade-Major, and of the Officers Commanding regiments, in the Brigade to which he belongs.

2. These orderlies will be subsisted by their own regiments, but will be located near the head quarters; and they will always remain in attendance.

3. When the Division parades for field-exercise these orderlies will join their respective regiments.

General Instructions.—1. Her Majesty's warrant and Regulations relative to Barracks, are in all respects equally applicable to the Huts and premises of this encampment.

2. No passes are to be granted to soldiers to be absent from camp after tattoo, except by the permission of the Officer Commanding the Brigade.

3. No strangers or civilians, except the wives and friends of soldiers, are to be allowed to visit the sutlers' booths, licensed to sell articles to the soldiers, and their huts must be cleared and closed at tattoo.

4. Smoking is strictly forbidden within fifty yards of the ammunition depots, or of the forage stores, or in the stables. Men found disobeying this order are to be confined.

5. The earthen walls erected between the lines of each regiment are to be carefully preserved. No pegs are to be driven into them, nor in any way are they to be defaced. The sentries on the flanks of regiments are to be instructed to watch that this order is not disobeyed.

6. These regulations are to be read and explained to the men before they proceed to the Curragh.

By order of the General Commanding in Ireland,

R. B. Wood, D.A.G.

Adjutant-General's Office, Dublin.

REGULATIONS IN CASE OF FIRE AT THE CURRAGH CAMP.

GENERAL ORDERS IN CASE OF FIRE.

1. Every occupied hut and room in camp to be provided nightly with at least one bucket full of water. Buckets.

2. The doors and windows of a hut on fire are to be kept closed as much as possible. Doors and Windows.

3. On an alarm of fire, the Sentry at the Post-office will ring the Fire Bell. Fire-bell.

4. The Officer commanding the Quarter Guard of the square nearest to where a fire breaks out will cause his Bugler to sound the "Alarm" until taken up by adjacent regiments. Officer on Guard.

5. Men will be detailed by the Officer commanding this guard to warn—

1. The Aide-de-Camp of the Lieutenant-General Commanding.
2. The Fire Master.
3. The Serjeant of the Fire Brigade.
4. The Commanding Royal Engineer.

6. He will also send the Corporal of the guard to the Fire Bell, which is to be rung sharply till stopped by competent order.

The Corporal will remain near the bell for the purpose of giving information as to the locality of the fire.

7. The Sentries throughout the camp will rouse all the officers living near their posts. Sentries.

8. The Engine parties will be marched at once by the officers in charge to the Engine-Houses, and proceed thence with the engines, hose-reels, screws, buckets, and lanterns, to the place on fire. The senior officer of each party will be held responsible that none of these articles are left behind. Engine Parties.

9. The engine which first arrives will be attached to the tank nearest to the place on fire; the others to adjacent tanks, or fire-plugs, as may appear best to the Fire Master.

10. The Regimental Fire Picquets will proceed as quickly as possible to execute the duties in which they have been instructed by the Fire Master. Fire Picquets.

11. Six men of the Mounted Police will proceed to the fire to act as orderlies. Mounted Police.

12. The regiments will parade in fatigue dress in their respective squares, and await orders. Regimental Parades.

13. All guards to be under arms, and the in-lying picquets under the Orderly Officer at the rear-guard rooms of their respective squares.

These parties to be under the orders of the Field Officer of the day.

14. Quartermasters and Pioneers will remain at the Quartermaster's stores.

The Adjutants and Clerks at the orderly rooms.
The Medical Officers and orderlies at the hospitals.
The Paymasters and Clerks in the pay offices.
The Officers' servants to repair to their masters' quarters and remain for their protection.
The Men employed at the officers' and serjeants' messes to repair to the mess-rooms.
The Bat-men to the stables.
The Master Tailors and Shoemakers to their workshops, and the Schoolmasters to remain in the school-rooms.

15. Officers commanding regiments will send in a report on the last day of each month to the Brigade offices, in the following form:—

"I certify that all orders relative to *Fire* have been made known by me to the officers and soldiers of the regiment under my command; that a Captain and Subaltern are in command of the 'Engine Party' detailed from the —— Regiment (should there be one); that the Regimental 'Fire Picquet' of one non-commissioned Officer and twelve men is available whenever required by the Fire Master; and that its men are quartered together in the same hut. Certificate.

"I further certify that the officers and men of these parties have not been changed without due authority; also that a bucket full of water is placed nightly in each soldier's hut; and that regimental supervision is daily exercised over all orders connected with the subject of precautions against fire."

FIRE BRIGADE, FIRE PICQUET, AND ENGINE PARTIES.

Fire Brigade. 1. A permanent "Fire Brigade" of one Serjeant and ten men, wearing a distinctive grey uniform and helmet, are quartered in F Square.

Fire Picquet. 2. A "Fire Picquet" of one Non-Commissioned Officer and twelve men is detailed from each regiment quartered together in the same hut, and is to be available *whenever* required by the Fire Master.

Engine Party. 3. An "Engine Party" of one Captain, one Subaltern, and 100 men, with a due proportion of non-commissioned officers, is detailed for each of the four large engines in camp.

These parties will take orders from the Fire Master and Commanding Royal Engineer only, who will advise the Officer Commanding the Brigade, or senior officer present in which a fire takes place, as to the measures they consider necessary for its extinction, and ask him for such assistance as they think the troops can advantageously afford.

The Company of Royal Engineers will take charge of the small engine.

4. The officers and men of the Engine Parties and Fire Picquets are not to be changed, except by order of the Lieutenant-General Commanding, which will be duly notified in Division Orders.

5. The names of the officers in charge of engines will be furnished to the Fire Master.

MACHINES PROVIDED TO ASSIST IN EXTINGUISHING FIRE.

Fire Engines, Hose-Reels, and Fire Screens. The Fire Engines are placed as follows:—

Nos. 1 and 5 Engines, in Engine-House left of A Square, with a Hose-Reel and Fire Screen.

No. 2, in Engine-House, Divisional Staff, with a Hose-Reel and two Fire Screens.

No. 3, in Engine-House front of Water Tank, H Square, with a Hose-Reel and Fire Screen in front of square.

No. 4, in Engine-House at R. E. Park, next R. E. Office, with a Hose-Reel and Fire Screen.

The other three Fire Screens are in front of C, D, and I Squares, and will be brought up by the parties told off to work them.

All engines are under the immediate direction of the Fire Master, who is responsible that they, as well as *all* the appurtenances for extinguishing fire, are *at all times* in proper working order.

The engines will be worked by the Fire Master once a month, with one length of hose only, unless circumstances should render it advisable to do so oftener.

Keys of Engine-House. The keys of the Engine-Houses are in triplicate—

One in charge of nearest guard.
2nd, in charge of Fire Brigade Serjeant.
3rd, in charge of Fire Master.

Ladders and Grappling-Irons. Two ladders and grappling-irons are hung to the side of each guard-house. They are in charge of the guard, who will be responsible for their safety, and will be used as may be directed by the Fire Master or Commanding Royal Engineer.

Fire Annihilators. Some of these engines are kept at each Engine-House, and are under the sole charge of the Fire Master. They will not be fixed except by his order, or that of the Commanding Royal Engineer in camp, or, in their absence, by order of the senior officer present.

Water, There is a 10,000 gallon tank in every square, or large block (thirteen in all), with a large cock at side to fit the engine hose. These tanks must furnish all water for the first half-hour when the steam-engines at the water-works have been started (probably, twenty to thirty minutes after the Engineer has been warned). A supply of water to feed the fire-engines can be procured at the triple fire-plug in the centre of every square, and at the barrack stores, and at the fire-plug next each tank, which can also be made to act as an engine.

By order,

R. B. Wood, D.A.G.

The Curragh, January 8th, 1857.

Adjutant-General's Office,
Dublin, 19th September, 1856.

GENERAL ORDER.

The General Commanding has great satisfaction in conveying to the heads of Departments under his command the expression of "the marked thanks of his Excellency the Lord Lieutenant, which he desires may be communicated to them at the close of the disembodiment of Militia for the admirable manner in which that force has been organized and regulated."

His Excellency observes "that the magnitude and importance of this duty will be appreciated when it is remembered that one levy of more than 20,000 was drawn rapidly from the population and placed under officers, many of whom were themselves new to arms; that this large body was for a time superadded to the ordinary force of the country, and brought into contact, under circumstances which might have led to various jealousies with the troops, the police, and the people; that again, the regular troops were withdrawn to meet the urgency of the war, and the good order and discipline of these new regiments became conspicuous in the garrisons and stations confided to them; that to the various officers of the staff every credit is due for the energy and skill with which they mastered their increased duties; that without pretending to enumerate all, his Excellency would specially advert to the Deputy Adjutant-General, to whom the discipline and order of the Militia must be largely indebted, and to the Deputy Quartermaster-General, and the Commanding Royal Engineer, by whose exertions temporary barracks have been provided, the new camp at the Curragh has been erected, and the necessity of resorting to billets has seldom occurred."

While the General Commanding communicates this approbation of his Excellency, he cannot but mention that the duties of the military authorities were greatly facilitated by the exertions, zeal, and attention of the officers in command of Militia regiments, and the influence exercised by the officers serving under them.

By command of the General Commanding in Ireland,

R. B. Wood, D.A.G.

REPORT OF W. FORSYTH, ESQ., C.E., ON THE WATER SUPPLY TO THE TEMPORARY BARRACKS ON THE CURRAGH OF KILDARE.

Office of Public Works,
Dublin, 27th November, 1855.

Sir,

In accordance with the Board's instructions, dated the 22nd November instant, I have made an inspection of the pumping apparatus, as directed, and have to submit the following report on the points upon which my opinion was required, according to the memorandum of the Commanding Royal Engineer in Ireland.

First. The sufficiency of the engines, boilers, pumps, &c., connected with the works and machinery for raising water, both as to power, application, and value, according to the terms and conditions of the contract, &c. The steam-engines are, with a moderate weight on the safety valves, nominally about eight horses' power each, but may be, without risk, occasionally worked higher.

The general arrangement and application of the power of the steam-engines, pumps, and attachments, I consider very good and convenient; the materials, fittings, and workmanship are first-class, and, with one exception, in accordance with the specification and contract. The exception referred to is this: in the specification it is provided that the steam-engines and pumps shall work "direct on the main shaft." This seems to have been a mistake, and was rectified in the execution, by the addition of a second shaft and double spur gearing, which efficiently regulates the speed at which the steam-engines and pumps should be respectively driven.

Judging from the schedule of detailed prices handed to me, I have to report that, in my opinion, the steam-engines and pumps complete are fair value for their cost.

Second. That the well or shaft is, in reality, carried to that sufficient depth as to insure the never-failing supply of water, according to contract. From the fullest information which I could procure, and from the present appearance of the supply of water, I am of opinion that the contractors have

fulfilled the terms of the specification and contract. 1st. The shaft was sunk, as provided in the specification, "until the pumps were overcome by the spring." 2nd. After three days of constant pumping, there was no lack of supply to keep the pumps in full work. 3rd. From the stratification of the surrounding district, there is every reason to believe that the supply of water will be unfailing.

Third. Whether the power of the engines, and arrangement of mains, valves, stop-cocks, air-vessels, &c., are such as to meet the specified force and quantity of water through the stand-pipes and hose, in case of fire. The power requisite to throw the specified quantity of water—10,400 gallons per hour—to a height of fifty feet above the surface of the ground in the high parts of the encampment, is about equal to the power of twelve horses, nominally, which is only three-fourths of the nominal power of the steam-engines.

The capability of small pipes, of the specified weight per lineal yard, to resist pressure, depends, in a great measure, on their being cast of nearly a uniform thickness. Pipes of the specified weight per lineal yard, if the castings be good, may be constantly exposed to a head of 1,000 feet—equal to a pressure, per square inch, of nearly six times the actual pressure required in the present case. I have to report that I saw the water thrown to a height of sixty feet above the surface, from a stand-pipe near the tank tower; and I have no doubt, that when the apparatus is skilfully handled, it can be thrown to a greater height. The "relief" valve, near the engine-house, seems to be effective; and, as far as I could see, the pumps, air-vessels, pipes, and valves are, with one exception, in accordance with the specification and contract, and such as to meet the specified requirements.

According to the specification, the water should be pumped up into the elevated tank, where it was provided that the valves for directing it into the distribution tanks were to be placed. The valves, however, have been placed on the floor of the tank-tower, and the direction of the water into the distribution tanks is now regulated from thence. This arrangement relieves the steam-engines and pumps, on ordinary occasions, to the extent of from twenty-five to thirty feet of head to pump against; but the full benefit of the whole head is still preserved, as the water has perfect freedom to ascend the vertical pipe into the elevated tank, when this additional pressure is required, and the height or head from the valves to the elevated tank—nearly thirty feet—becomes a very important variable counter-pressure, which comes into action when required. In my opinion, this arrangement is much preferable to that originally proposed, as it affords the opportunity of relieving the steam-engine and pumps of a considerable weight when not required, and fully preserves the whole extent of the head specified.

I remain, sir, your obedient servant,

(Signed) WILLIAM FORSYTH.

The Secretary, Board of Public Works.

LETTER FROM COLONEL WOOD, DEPUTY ADJUTANT-GENERAL.

Dublin, 24th March, 1857.

MY DEAR LUGARD,

Having read your Narrative of Operations in the arrangement and formation of the Camp at the Curragh of Kildare, Lord Seaton desires me to say, that the rapid and efficient manner in which these operations were carried out does much credit to all parties concerned, and especially to the Engineer Department.

The peculiar form of the camp has, in his Lordship's opinion, completely answered the objects for which it was designed, viz.,—1st, the separation of regiments so as to assist in their regimental discipline, regimental police arrangements, and the interior economy peculiar to each corps. 2ndly, to guard against the spread of fire into a general conflagration, without so widely spreading the camp as to militate against the comfort of the troops, and facility of assembling, both on ordinary occasions and for general parade.

I remain yours very faithfully,

(Signed) R. B. WOOD.

Lieutenant-Colonel Lugard, Royal Engineers.

LETTER FROM LIEUTENANT-COLONEL WALKER, ASSISTANT QUARTERMASTER-GENERAL.

My Dear Lugard, The Curragh, 10th February, 1857.

I lose no time in answering your letter of yesterday's date, in which you ask for the opinion which I have formed on my personal experience of the construction of the Camp at the Curragh, and, indeed, of its general success.

I cannot hesitate in giving this opinion, as the subject has been a matter of very constant thought for so many months.

I think that, provided no greater number than 10,000 men are to be accommodated, the general plan of the camp is most excellent, and the location of the brigades, on either hand of the group of offices in the centre, convenient, and conducive to the speedy transaction of public business. We gain greatly by centralization.

The division of the camp into squares, each sufficient for a regiment, separated by sod fences, is a great assistance to regimental discipline, while the space in the centre enables all private drills to be carried on near home—no small object in the saving of time and labour.

The regimental offices, stores, and guard-rooms are conveniently placed; and the separation of the different portions of each square by the front and rear roads, completes the excellence of the arrangement.

The cooking apparatus would bear improvement; the stoves are wasteful; and the small ovens are useless for want of baking-tins of a size to go in at their doors.

The supply of water is, indeed, most successful. Abundant water for all purposes is within easy reach of every person in the camp; and, as a regimental officer of long standing, I pronounce this a most important aid to the cleanliness, and even discipline of a corps.

With the exception of the Commissariat Department, in respect of which much would have been gained by all its branches being within the same enclosure, the public stores appear to be well placed; and the placing a coal-yard in rear of the centre of *each* wing of the camp, materially lightens one of the most troublesome issues to troops.

Some of the accommodation furnished is too small, particularly the Quartermaster's storage for each regiment; the Tailors' and Shoemakers' shops; and the regimental Sutlers' huts.

The three first of these can always be increased by using unoccupied huts, of which, as long as the camp is not crowded, there are plenty to spare.

I very much question whether any improvement could be made in the site. The advantages are numerous. Independent of the beauty of the position, it is just situated so as to afford the most easy access from all points of the neighbourhood—an advantage which would have been lost by occupying the remainder of the plateau extending towards Kildare; nor do I consider that the exposure has in any way affected the general health of our population. The average number of sick has been singularly low; and however disagreeable the gales which sweep over us may be to our feelings, they have certainly not been productive of disease.

The facility of drainage in a camp which slopes to the front and rear must not be forgotten, as an important adjunct in the preservation of cleanliness and health.

I may be partial to an establishment which I have seen grow from chaos into order, but I feel justified in pronouncing the general arrangement of this camp "a great success."

Pray believe me, my dear Lugard, very faithfully yours,

Beauchamp Walker,

Lieutenant-Colonel, A.Q.M.G.

MEMORANDUM BY DOCTOR MACLEAN, DIRECTOR-GENERAL OF HOSPITALS.

The period over which the following returns extend being so very limited, the employment of the method of averages (of such high advantage when applied to large numbers, and including several years) could not have been resorted to with advantage, but wherever this method could have been made available it has been introduced.

So far as it extends, it affords an opportunity of comparing the sickness and mortality of recently embodied troops with those whose periods of service have been of longer duration and of more varied nature.

The return commences with the month of July, 1855, at which time the encampment consisted almost entirely of militia regiments recently embodied, with whom were associated very small numbers

of regiments of the line; and thus was the encampment constituted until June, 1856, when its component parts consisted solely of regiments of the line, with a small detachment of the Military Train.

Referring to Table I., in which the method of averages has been employed, it appears that during the annual period terminating in June, 1856, 1,227 cases of illness occurred in every thousand of the mean strength, whilst for the year ending June, 1857, the ratio of admissions to the mean strength was very considerably less; and as in neither of these years did disease of a serious nature or epidemic character prevail to any extent, the marked discrepancy between these years, with respect to the admissions into hospital, may in strict propriety be referred to the difference in the components of the force encamped in the respective years over which this return extends.

Although, as already observed, disease of a serious nature or epidemic character did not prevail to any extent in the camp during either of the years in question, yet taking into consideration the various influences in operation during the raising of the militia force, it is presumed it will be readily conceded that in a body of men hastily brought together, and passed into the service without that careful discrimination used in recruiting for the regular army, many individuals of a low standard of health, as well from extreme youth as advanced years and naturally defective stamina, must have been introduced into the militia force, and will satisfactorily account for the greater proportional quantity of sickness and mortality between the first and following year of the encampment.

However, notwithstanding the disadvantages under which the militia force was embodied, the liability to disease, as exhibited in the return of 1855-56, will bear a not unfavourable comparison with that of troops of the line serving in the United Kingdom, and lodged in barracks, as may be seen by reference to Table III., taken from the published statistical returns of the army, whilst the sanitary condition of regiments of the line encamped during the year 1856-7 exhibits results highly favourable to the locality selected for the hutment of troops on the Curragh.

The principal classes of diseases by which the admissions into hospital have been occasioned are shown in Table II., compiled from the monthly returns of sick of each corps stationed at the Curragh; and from inspection of the table it will be perceived that a considerable difference has obtained in the proportion of the sickness and mortality as occurring in the first and in the second year of the encampment, extending, with three exceptions, over *all* the diseases, and strictly referrible to the difference of the force in each year—that of the first having been composed of hastily-recruited and recently-embodied militia soldiers, whilst that of the second year consisted of more carefully selected recruits and well-disciplined soldiers of the line.

Comparing the influences of the same diseases, as occurring amongst the troops encamped on the Curragh and amongst infantry regiments quartered in barracks throughout the United Kingdom, the result is highly favourable to the former; and so far as exposure to the inconveniences of a camp residence might be deemed a cause of disease, it does not appear that any peculiarly prejudicial effect can be traced to the encampment at the Curragh, but on the contrary. The climate of the Curragh is cold and bracing; the elevated ridge on which the hutment is built appears to be a large bank of sand and shingle, and is well chosen for the purpose: in consequence of this subsoil no surface water remains, but sinks almost as fast as it falls. The site of the camp is exposed and unsheltered, but then it has the advantage of being free from dampness and affording a good fall for water-drainage. The water-drainage of the camp is now nearly completed, and, apparently, will be successful.

The supply of water is abundant, but it is excessively loaded with lime; which, however, does not render it injurious to health, although unfit for certain medicinal purposes without being prepared. And I am quite of opinion that none of the diseases are attributable to the climate of the Curragh, to camp life, or to any of the arrangements connected therewith.

In connexion with the advantages derived from locality, supply of water, and of drainage, I would especially notice the highly judicious plan adopted by the Royal Engineers in the general distribution of the huts, and which has been of primary importance in maintaining its salubrity—the hutments having been spread over a very extensive surface; and thus, whilst all the purposes necessary for the segregation of regiments forming separate divisions have been attained, the crowding of the huts has been avoided, and a thorough ventilation amply secured and maintained.

Although extending over too brief a period, and dealing with numbers relatively too small to afford conclusions of extensive application, yet, from such data as we have now presented, it will not be unsafe to presume upon the future fitness of the Curragh for those purposes to which it has been applied for the last two years.

C. MACLEAN,
Inspector-General of Hospitals.

Army Medical Office,
Dublin, 22nd August, 1857.

TABLE I.—Showing the ADMISSIONS into HOSPITAL and DEATHS among the Troops at the Camp, Curragh, from the 1st July, 1855, to 30th June, 1857.

YEARS.	Mean Strength.	Total Admissions.	Total Deaths.	Ratio per 1,000 of Mean Strength.	
				Admitted.	Died.
From July, 1855, to June, 1856, .	4,590	5,635	28	1,227·6	6·
From July, 1856, to June, 1857, .	5,266	5,126	16	973·9	3·2
Total for Two Years, . .	9,856	10,761	44	2,200·	

TABLE II.—Showing the PRINCIPAL DISEASES among the Troops at the Camp, Curragh, from July, 1855, to June, 1857.

DISEASES.	Admissions.		Deaths.		Ratio of Admissions per 1,000 of Mean Strength.	
	Total among whole Force to June, 1856.	Total among whole Force to June, 1857.	Total among whole Force from July, 1855, to June, 1856.	Total among whole Force from July, 1856, to June, 1857.	From July, 1855, to June, 1856.	From July, 1856, to June, 1857.
Fevers, ...	285	211	–	5	62·09	40·
Disease of the Lungs, . . .	676	604	16	10	123·3	110·9
,, Liver, ...	21	42	–	–	4·57	8·
,, Stomach and Bowels, .	177	198	2	2	38·56	37·8
,, Brain, ...	77	61	3	1	14·6	11·5
Rheumatic Affections, . . .	312	290	–	–	68·	55·
Phlegmon and Abscess, . . .	668	655	–	–	102·	124·38
Venereal, ...	2,142	1,978	–	–	466·66	375·6
Wounds and Injuries, . . .	321	318	–	–	69·7	60·3
Ophthalmia, ...	233	348	–	–	50·76	66·08
Eruptive and Skin Diseases, . .	250	107	4	–	56·62	20·3
Other Diseases, ...	473	814	–	1	123·05	59·8
Total, ...	5,635	5,125	29	19		

TABLE III.—Showing the PRINCIPAL DISEASES among the Regiments serving in the United Kingdom.

DISEASES.	Total among Infantry Force.		Annual Ratio per 1,000 of Mean Strength of that Force.		Annual Ratio per 1,000 of Mean Strength of Cavalry.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Fevers, ...	11,637	396	73	2·5	53	1·4
Eruptive Fevers, ...	1,044	63	7	·4	5	·1
Diseases of the Lungs, . . .	27,436	1,641	171	10·2	152	7·3
,, Liver, ...	1,358	59	8	·4	6	·3
,, Stomach and Bowels, .	10,153	128	63	·8	78	·4
,, Brain, ...	1,051	127	7	·8	8	·8
Dropsies, ...	238	47	2	·3	1	·5
Rheumatic Affections, . . .	8,584	27	54		54	
Venereal Affections, ...	44,435	11	277		206	
Abscesses and Ulcers, . . .	19,843	35	124		165	
Wounds and Injuries, . . .	9,315	17	58	1·4	124	1·6
Corporal Punishment, . . .	768	–	5		3	
Disease of the Eye, ...	7,667	–	48		18	
,, Skin, ...	15,233	2	95		37	
All other Diseases, ...	8,383	130	52		51	
Total by Disease, . . .	167,145	2,683	1,044	16·8	961	12·4
Suicide, Accident, Violence, . .	–	127	–	·8	–	1·2
Not accounted for, ...	–	55	–	·3	–	–
Total, ...	167,145	2,865	1,044	17·9	961	13·6

LETTERS FROM CONTRACTORS.

LETTER from Mr. W. R. STEPHENS, Contractor.

Blackhall-place, Dublin,
26th March, 1856.

SIR,

Having now closed our contract on the Curragh, I beg leave to acknowledge the uniform kindness received from you and every officer connected with the Ordnance Department, while engaged therein. Such is particularly due to you; for I feel that the leniency extended during the progress of the work was mainly owing to the favourable report of the exertions we made, and without which, no doubt, ruinous liabilities would have been incurred before bringing such a heavy contract to a conclusion. Difficulties must necessarily arise; but the conciliatory spirit in which we were met enabled them to be got over; and it will always be a most pleasing reflection to me that in the progress of the work I never had an angry word with any person placed over us; and that, although we met perfect strangers, I believe I am correct in stating that we part friends.

You are, I believe, already aware of the feeling entertained towards yourself by my late respected partner; and if the Lord had spared him to see the completion of the work he was permitted to commence, he would, no doubt, join me in thus returning thanks for the kindness shown us. However, an all-wise Providence has ordained it otherwise; and I trust you will accept this imperfect acknowledgment from myself. The contract, although a losing one, has not proved so to the extent I at one time anticipated. In closing the accounts I will try and end all *unpleasant* recollections attending it.

One matter attending the business I feel very anxious about, and would be glad to know that it was closed—namely, Mr. Courtney's liability regarding the security he entered into for Mr. Toole's road contract. It would be a relief to Mrs. Courtney's mind to know that it was closed; for she feels uneasy as to the result until the worst is known. I am sure we can all feel satisfied of your kind offices in the matter; but whenever you are in a position to state the result, I will feel obliged by your letting me know.

I am, &c.,

To Captain Rich,
Commanding Royal Engineer, Curragh Camp.

(Signed), W. R. STEPHENS.

Mr. Courtney made an official visit to my office shortly before his leaving Dublin; and alluding to the state of his health, and the probability of his never returning, requested me to convey to the Commanding Royal Engineer, and to all members of the Department concerned, his grateful acknowledgment of the courtesy and liberality of feeling with which he had been invariably treated on all points relating to his extensive contracts at the Curragh.

(Signed), H. W. LUGARD, Lt.-Col., A. A. G.

EXTRACT from LETTER dated 27th July, 1855, from Messrs. A. and G. HOLME to CAPTAIN RICH, respecting the difficulties they had to encounter in carrying out their Contracts at the Curragh Camp.

"In carrying out the work we have to thank you and your subordinate officers for the prompt and kind assistance we have received in all matters connected with the setting out, construction, &c., of the various buildings."

LETTER from F. RITCHIE and SONS.

SIR, Belfast, 13th August, 1856.

Yours of 12th duly received, and shall at once make preparations for sending forward material. Girvan is at present engaged at a contract which we have with a most particular gentleman, but hope that he may have it completed on Saturday; at all events we shall endeavour to have him with you on Monday.

From the courteous and gentlemanly manner in which you have always treated us, we feel much obliged; and have no hesitation in leaving the price we should be paid for any work now to be executed entirely to your decision, knowing that you will allow us a fair and just price.

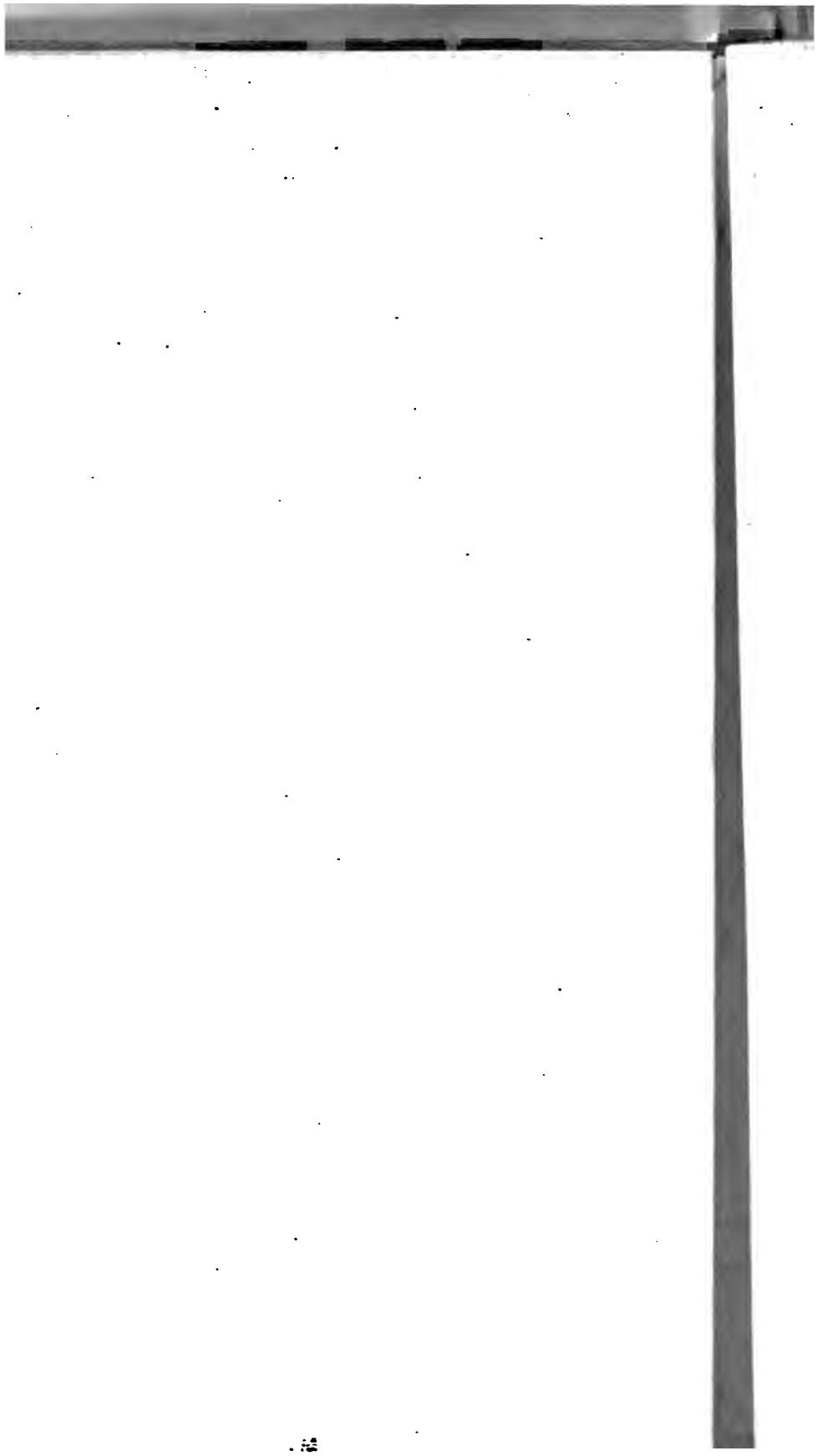
Yours, &c.,

(Signed), FRANCIS RITCHIE & SONS.

P.S.—The bills we shall look over and return in a few days.

Captain F. H. Rich,
Royal Engineer Office, Curragh Camp, Kildare.

DUBLIN: Printed by ALEX. THOM & SONS, 87 & 88, Abbey-street.

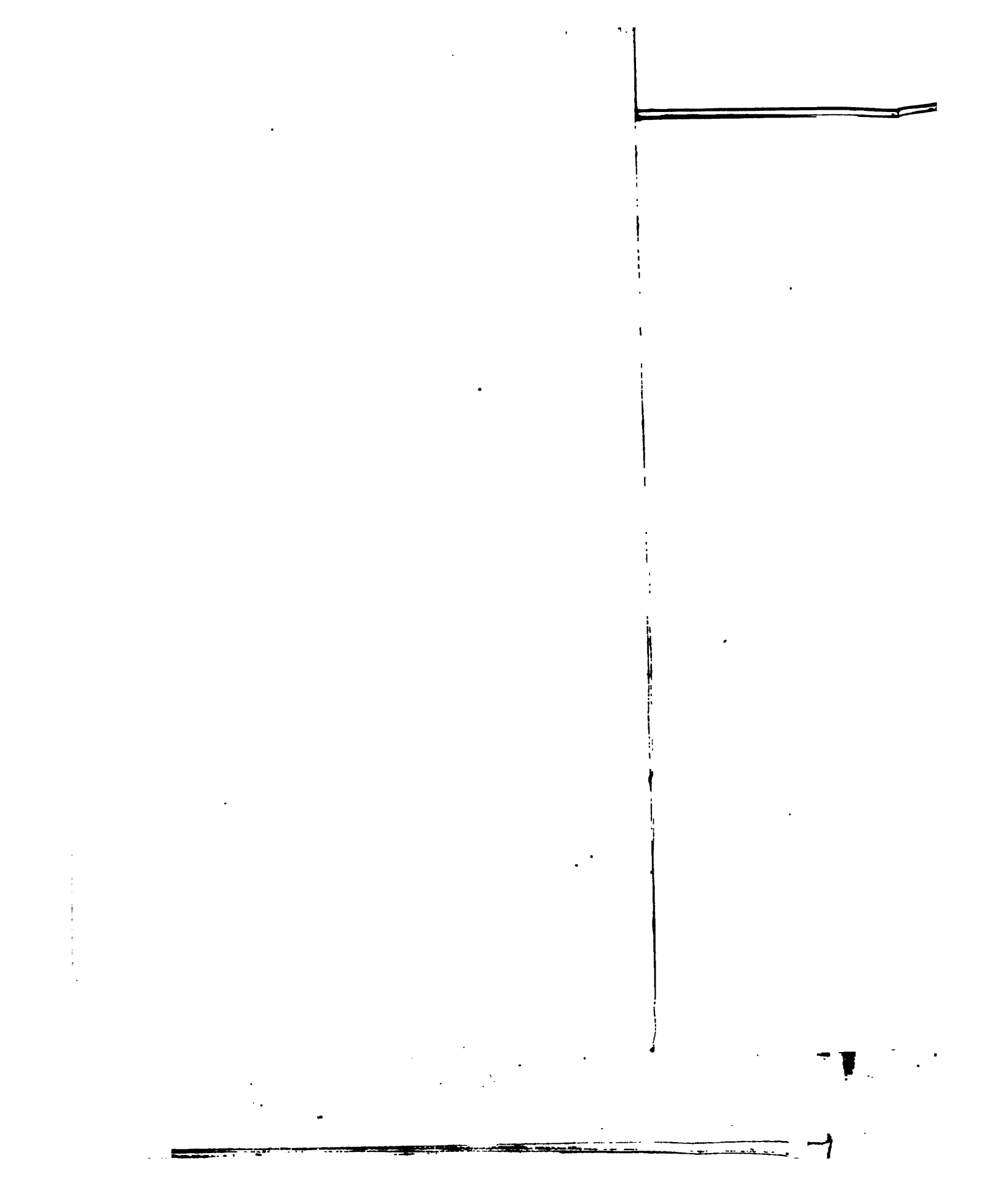


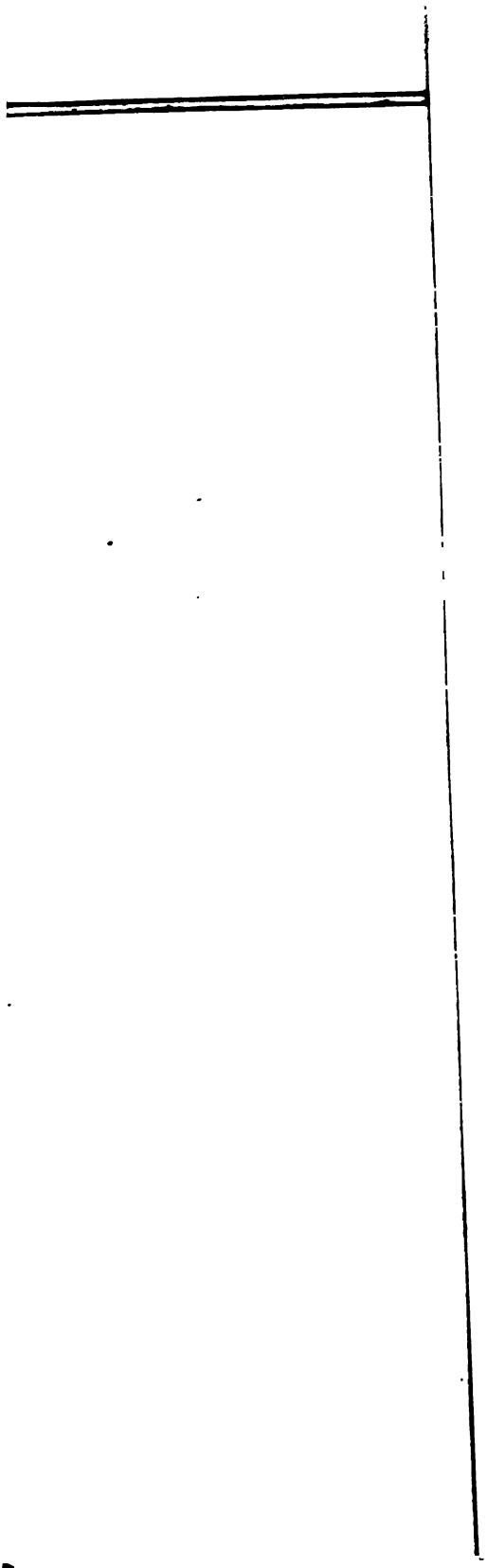
CURRAGH ENC

1855

ICAMPMENT

55.





INDI
TO
DETAIL P

N.º1	Officers' Quarters	Hut for General Commanding.	N.º 2
2	"	First Class Staff Hut for Brigadiers &c.	2
3	"	First Class Staff Hut for Deputy Adj. General &c.	3
4	"	Second Class Staff Hut & Hut for Com.g Officers.	3
5	"	Officers Huts.	3
6	"	Mess Establishment.	3
7	"	Hut for Officers' Servants & Cellars.	3
8	Soldiers' Quarters	Huts for Staff Serjeants &c.	3
9	"	Huts for Serjeants.	3
10	"	Huts for Provost Serjeants & Married Men.	3
11	"	Soldiers' Huts.	3
12	"	Cooking House.	4
13	"	Ablution Houses.	4
14	"	Privies.	4
15	"	Urinals &c.	4
16	Guard House	and Cells.	4
17	Grates, Stoves	Chimney pieces, Lamps &c.	4
18	Regimental Workshops	For Tailors, Shoemakers, Armourers & Farriers.	4
19	"	For Collar Makers & Wheelers	4
20	Stables	For Officers.	4
21	"	D.º	4
22	"	For 40 Horses.	4
23	"	For 50 Horses.	5
24	"	Forge & Infirmary Stables.	5
25	Gun Sheds	Plan & Section.	5
26	Hospitals	Medical Officers' Quarters.	5
27	"	Hospital Huts.	5
28	"	Stores, &c.	5

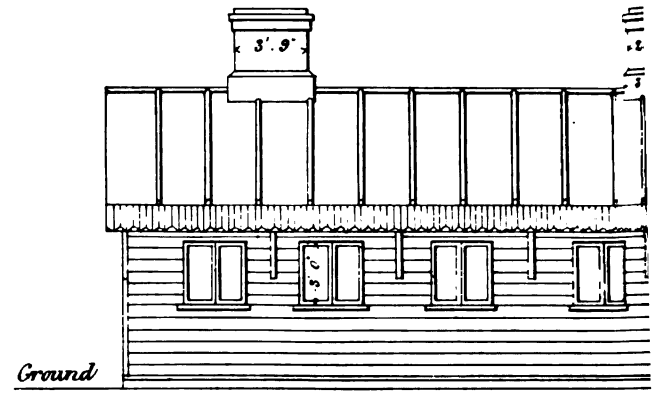
DEX
TO
L PLANS.

N.º 29	Hospitals	Ablution House & Dead House.
30	Church	Plan.
31	— „	Sections.
32	— „	Elevations.
33	Schools	Plan & Sections.
34	Racket Court	Plan.
35	„	Sections & Elevations.
36	Clock Tower	Plan & Sections.
37	Post Office	and Sutlers' Hut.
38	Barrack Stores	For Bedding & Utensils.
39	„	Straw Sheds
40	Bakery	Plans & Sections.
41	Butchery	Butchers Quarters.
42	„	Slaughter House & Stores.
43	Commissariat Stores	For Hay & Straw.
44	„	For Corn.
45	„	Forage Barn.
46	Royal Engineer Dep.t	Huts for Civil Staff.
47	„	Huts for Offices.
48	„	Workshops.
49	Police	Court House.
50	— „	Constabulary Barracks.
51	— „	D.º
52	Water Works	Plan.
53	„	Section & Elevation.
54	„	D.º
55	„	Plan shewing arrangement of water pipes.

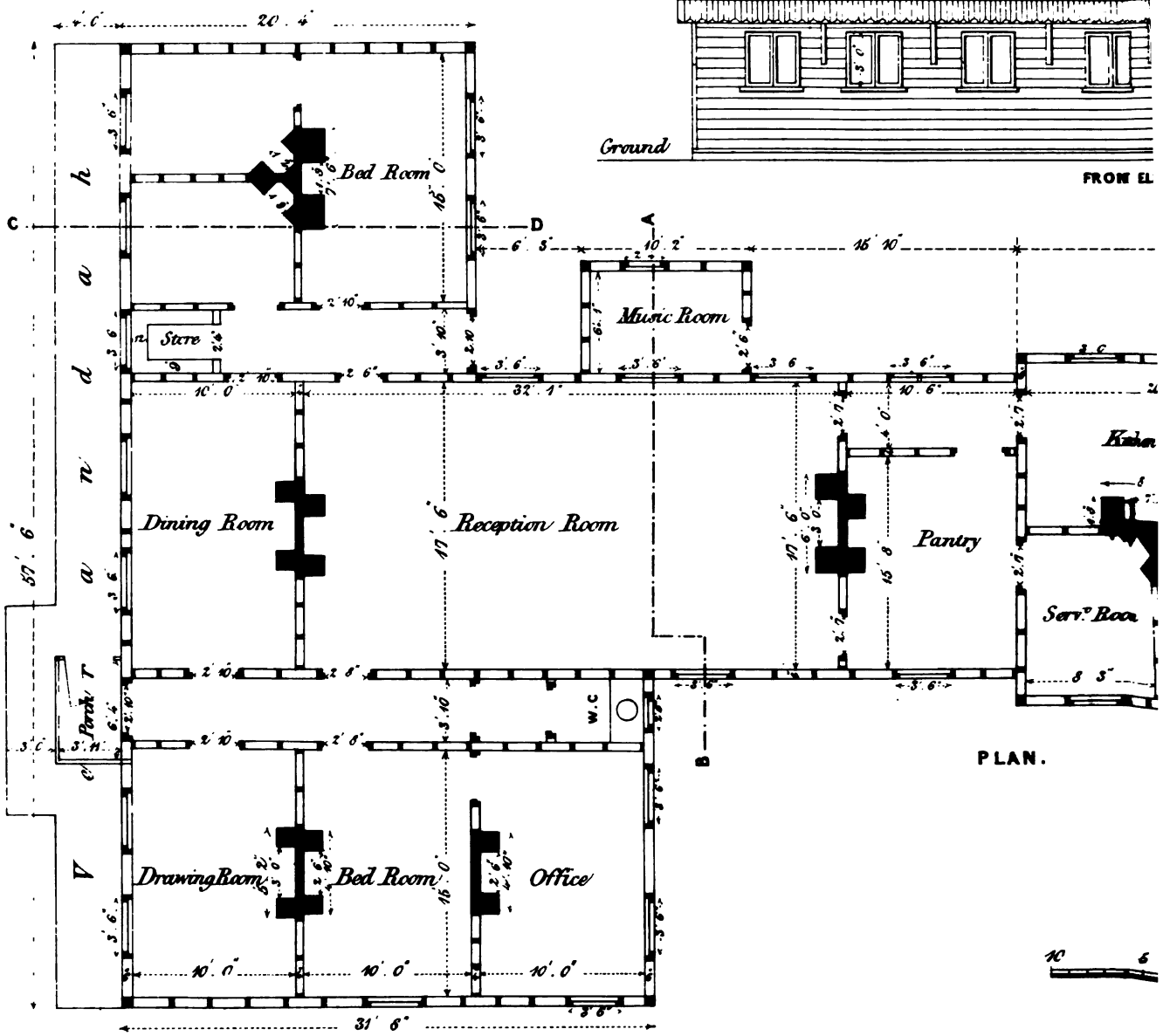
F. J. Huray, Lith. 9, Dame St. Dublin.

OFFICERS QU

HUT FOR GENERAL C



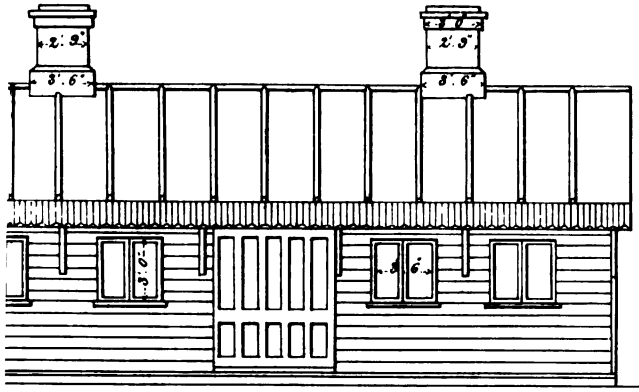
FRONT EL



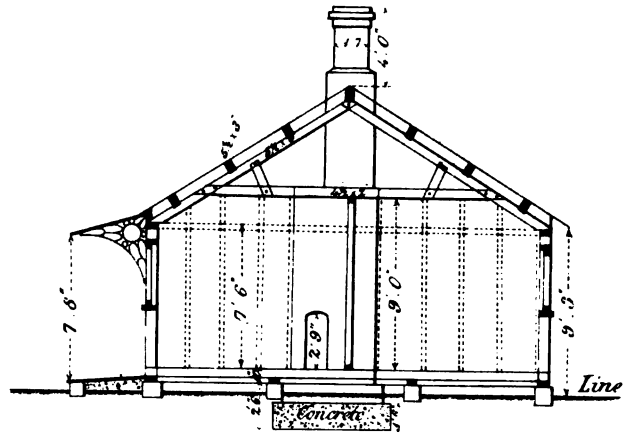
PLAN.

QUARTERS.

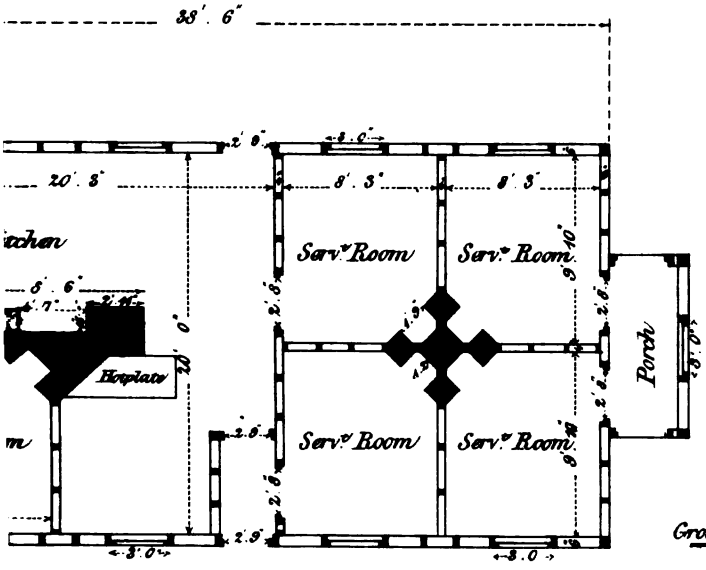
L COMMANDING.

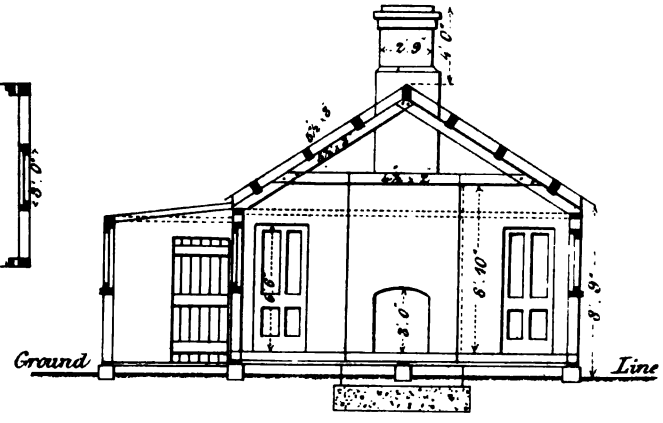


IT ELEVATION.



SECTION ON C.D.





SECTION ON A.B.

Scale.

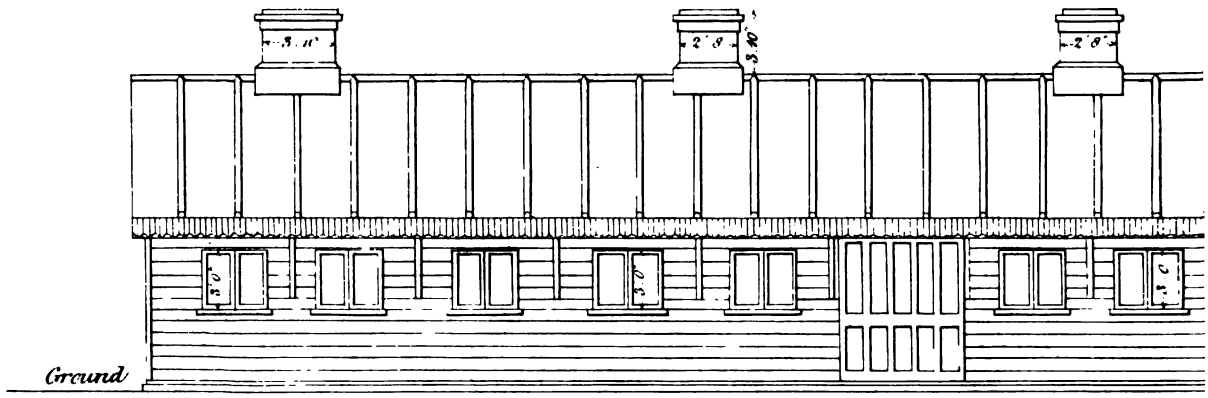
5 0 10 20 30 40 Feet.

E. J. Hartz, Lith. 9, Dame St. Dublin.

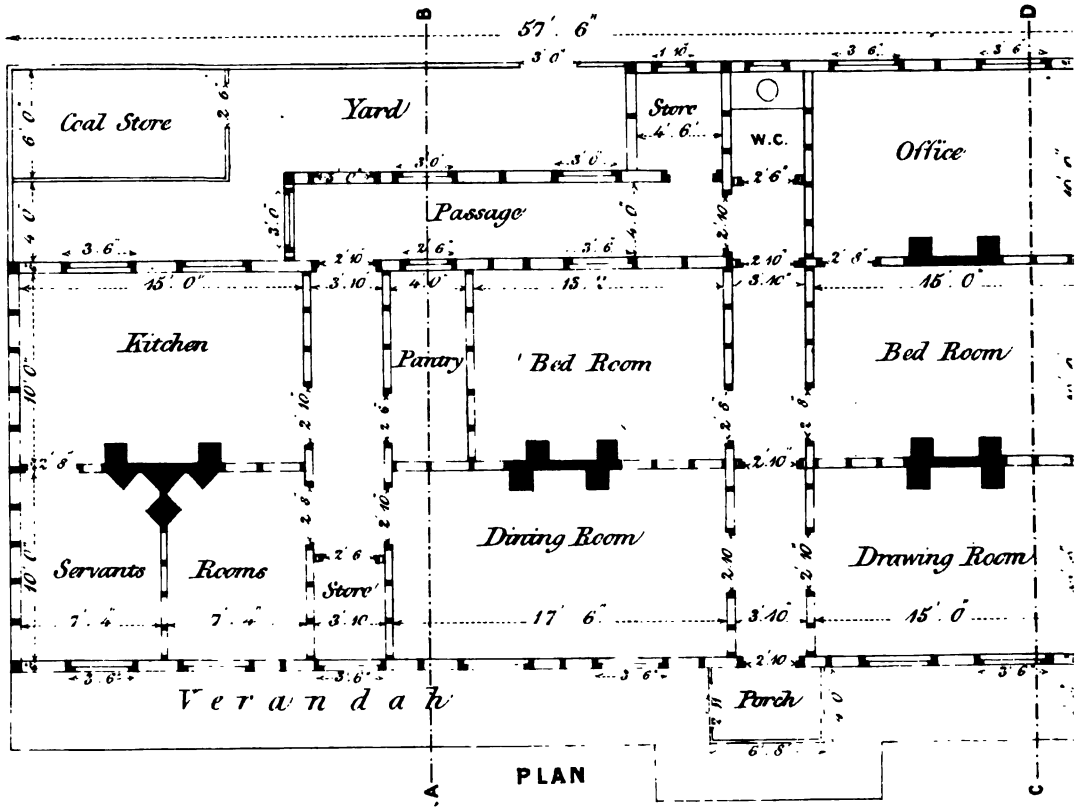
OFFICERS

FIRST CLASS

FOR BRIGADIERS, COMMANDING



FRONT ELEVATION.



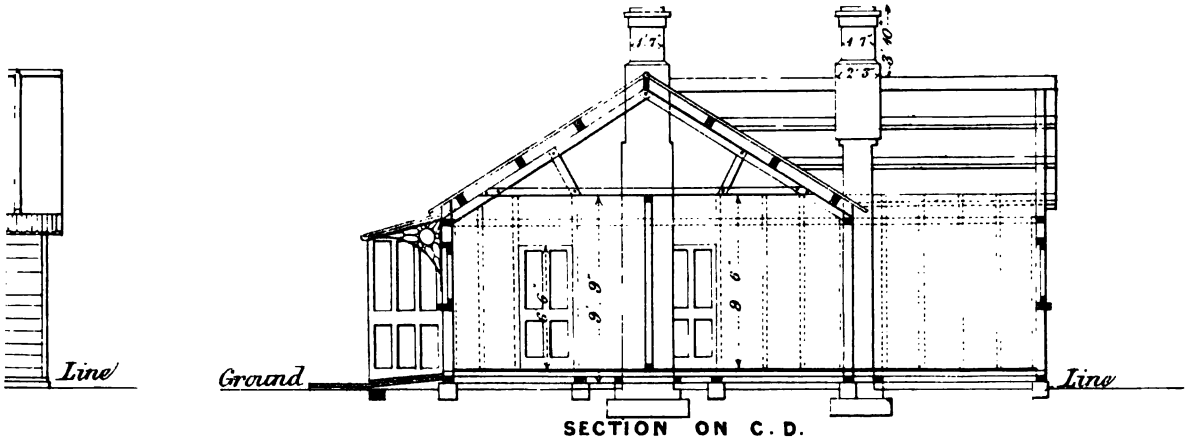
PLAN

Sca

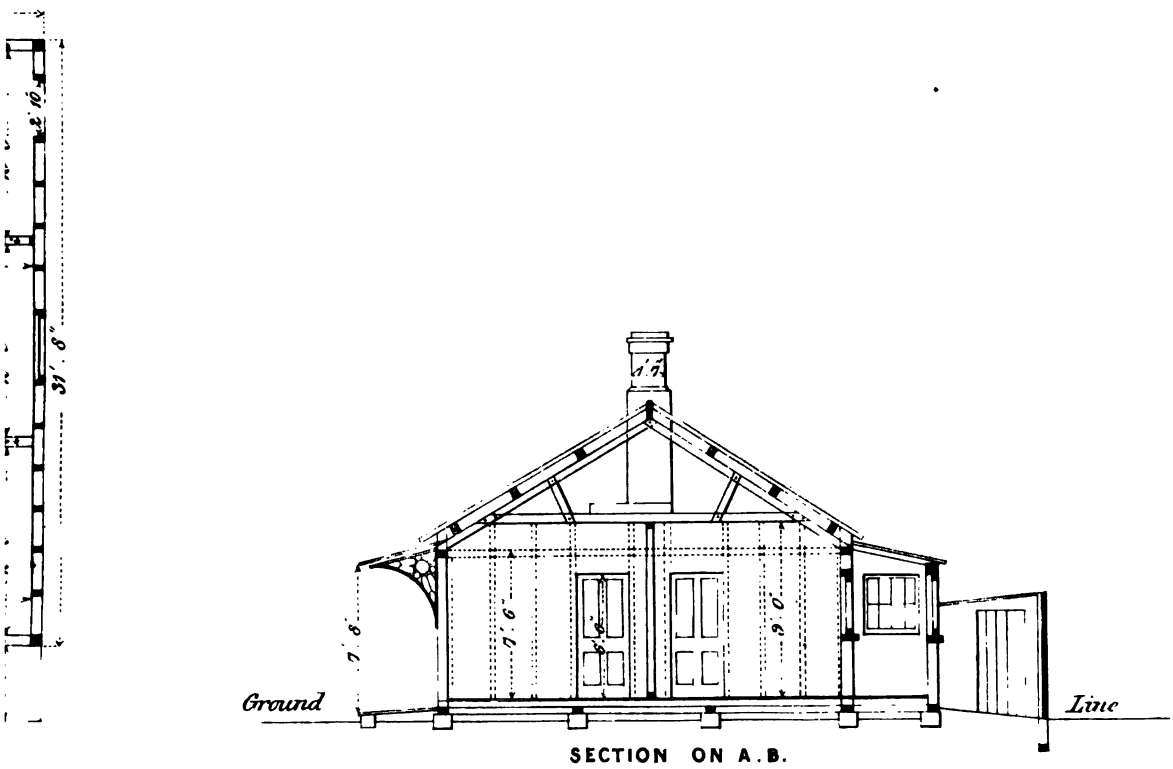
QUARTERS.

STAFF HUT

ENGINEER & BARRACK MASTER.



SECTION ON C. D.



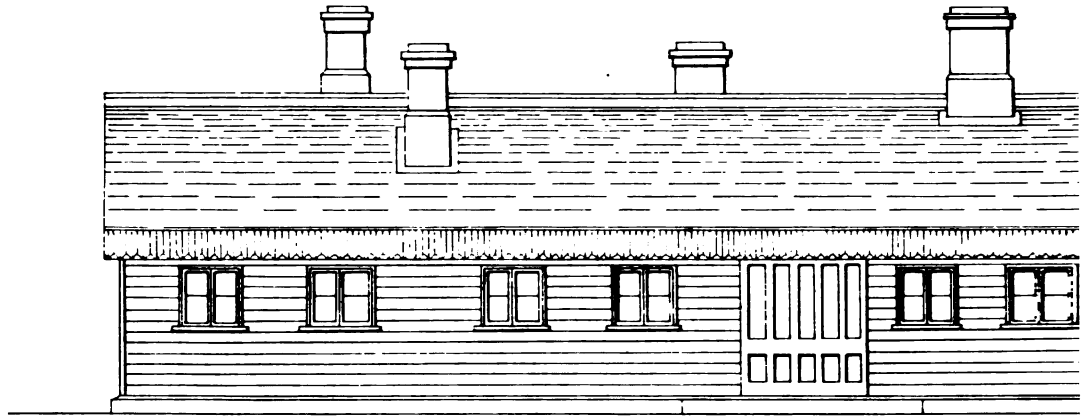
SECTION ON A. B.

E. J. Harp, 9 Dame St. Dublin

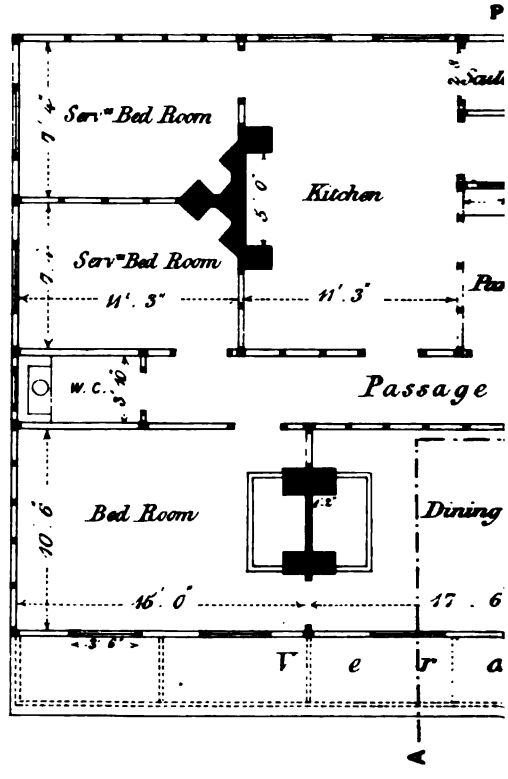
OFFICERS

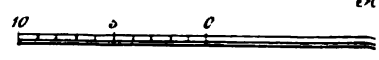
FIRST CLAS

FOR DEPUTY ADJUTANT CEN



FRONT ELEVATION

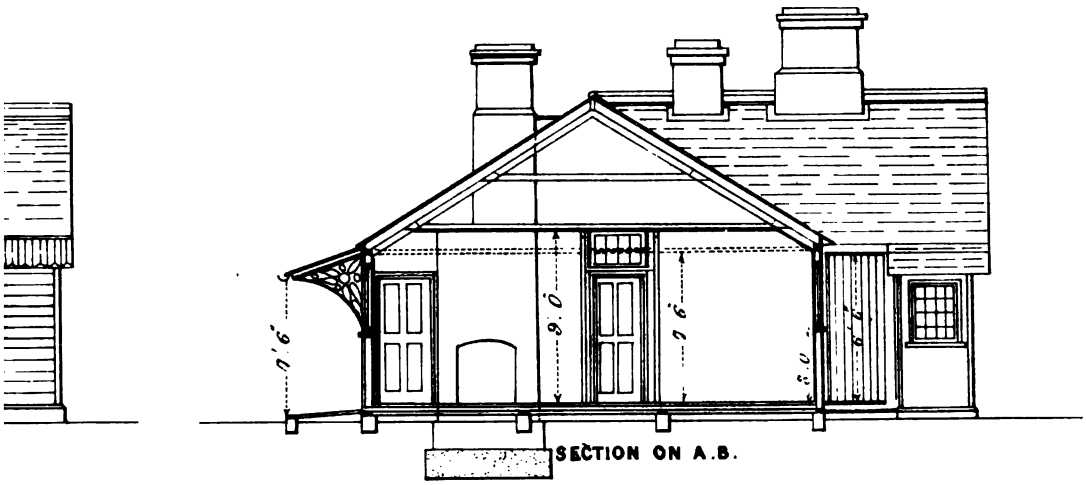




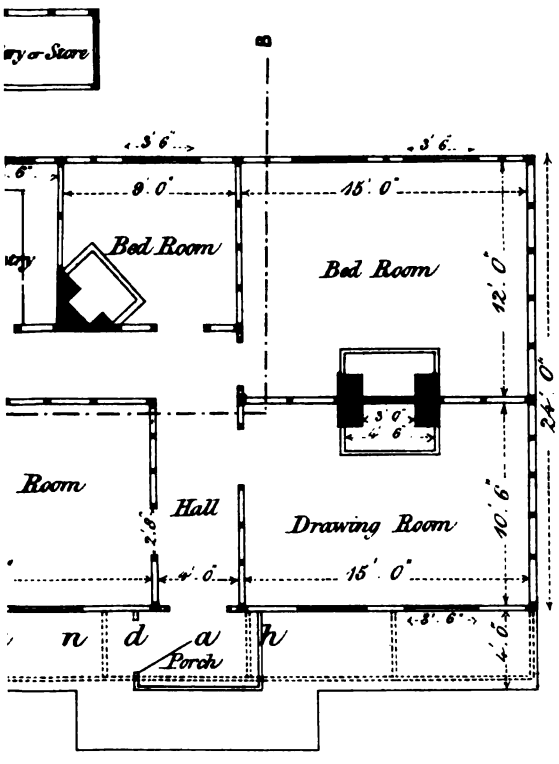
QUARTERS

STAFF HUT

:RAL AND RESID: MAGISTRATE



LAN



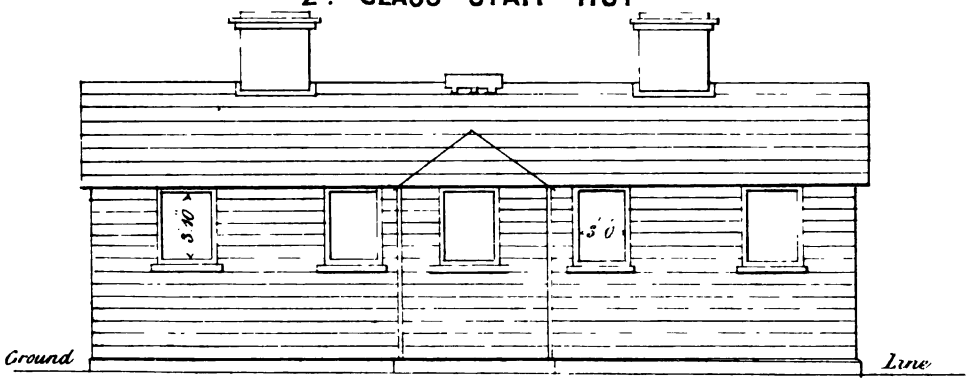
cale.

10 20 30 Feet

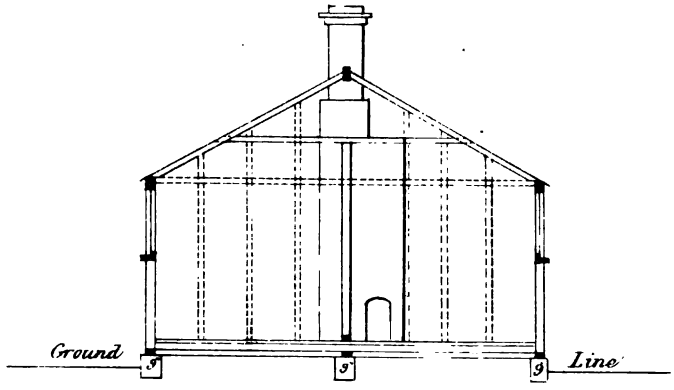
E J Hart, Lith, 9 Dame St Dublin.

OFFICERS

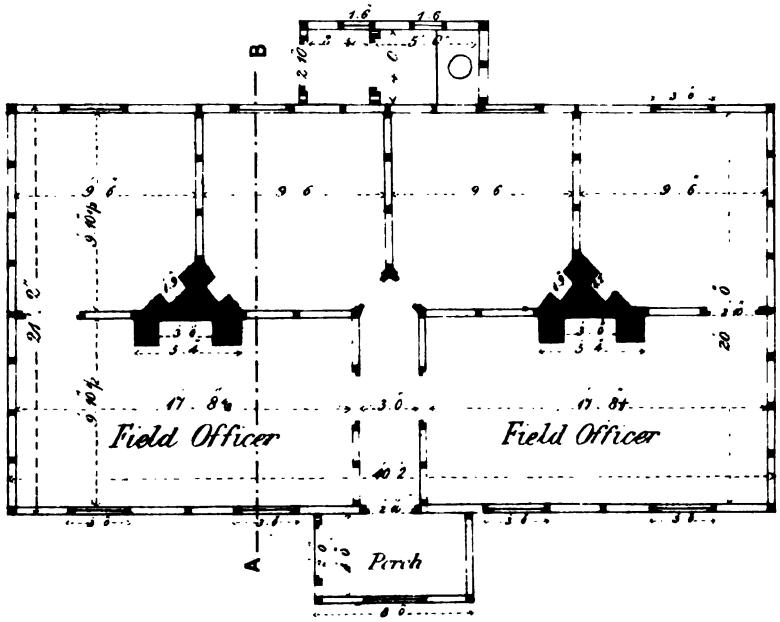
2ND CLASS STAFF HUT



ELEVATION



SECTION ON A.B.



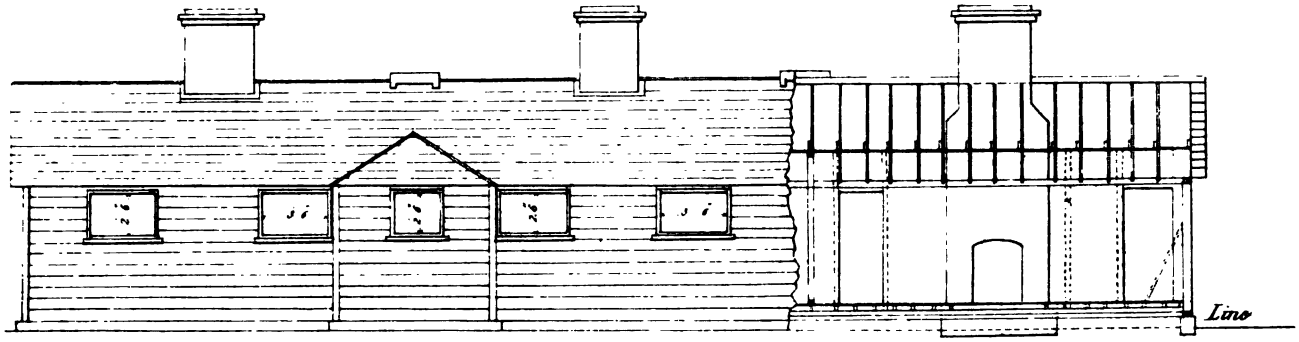
A

Sca

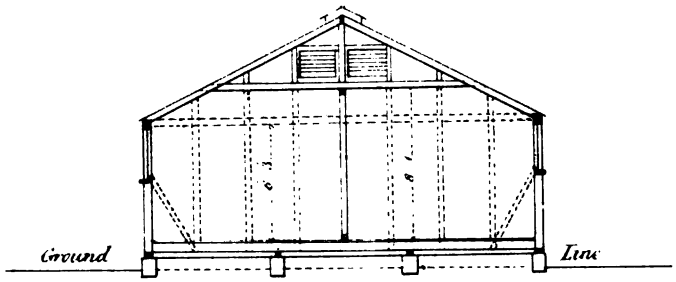
0 6 10

QUARTERS

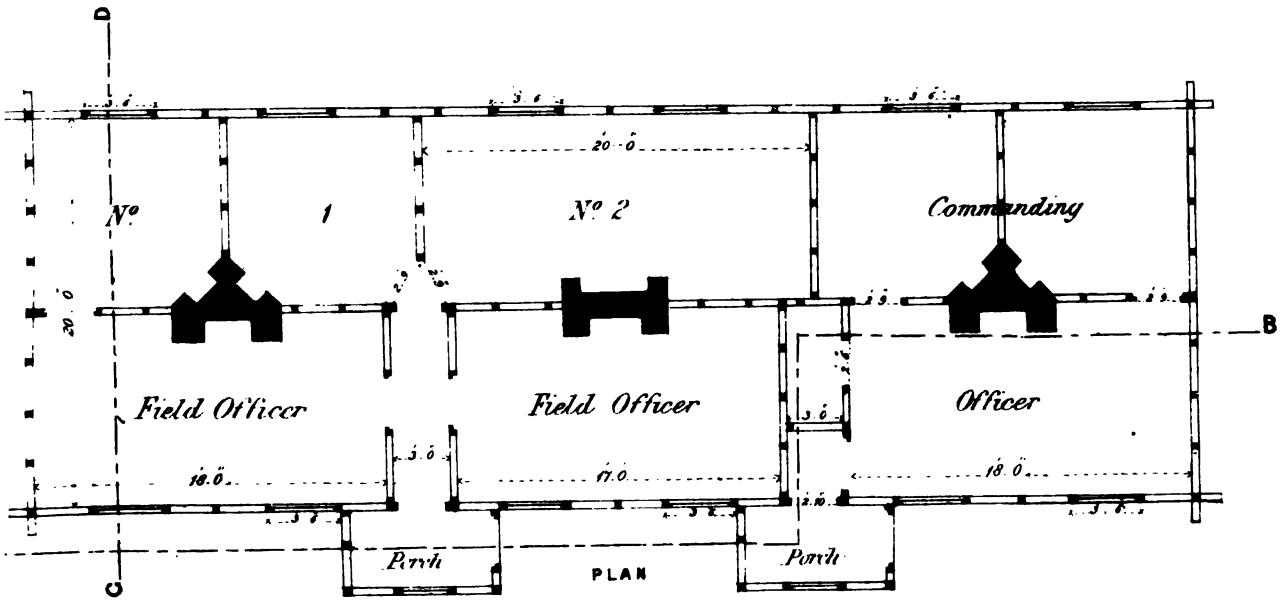
HUT FOR OFFICER COMMANDINC A RECIMENT & TWO FIELD OFFICERS



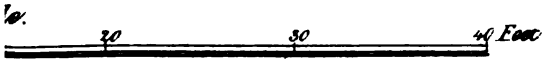
ELEVATION AND SECTION ON A.B.



SECTION ON C.D.

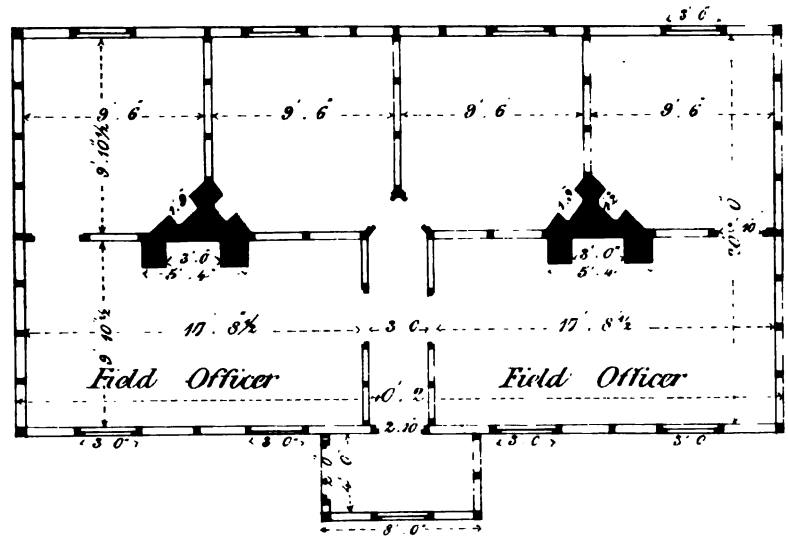


PLAN



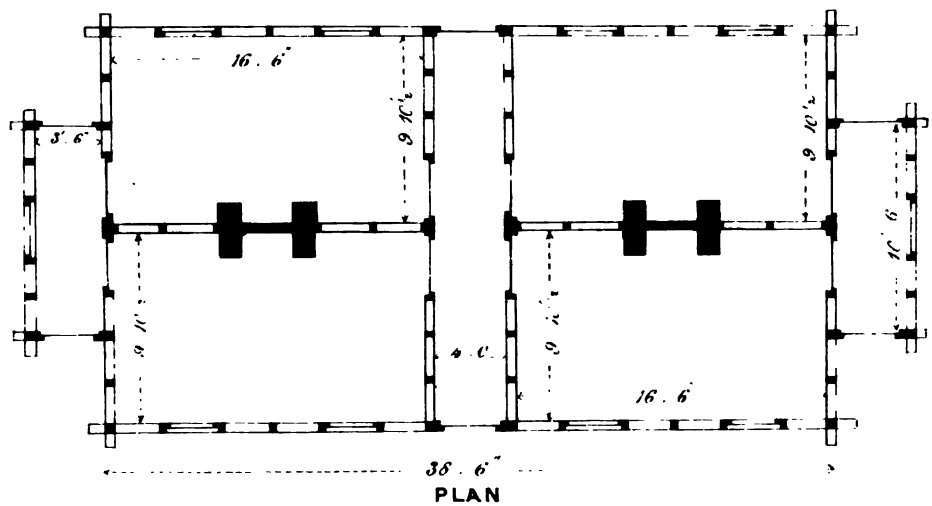
E.J. Barry Lith. 9, Dame St. Dublin

HUT FOR TWO FIELD OFFICERS OFFICERS



PLAN

HUT FOR BRICADE OFFICES



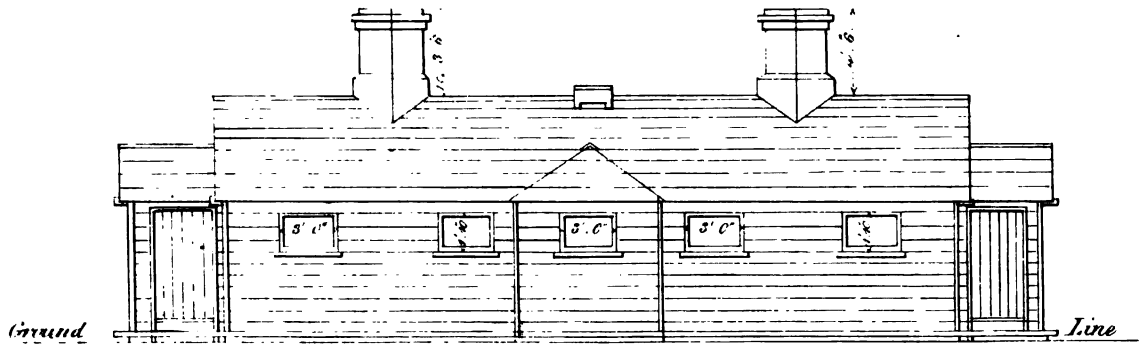
PLAN

Scale

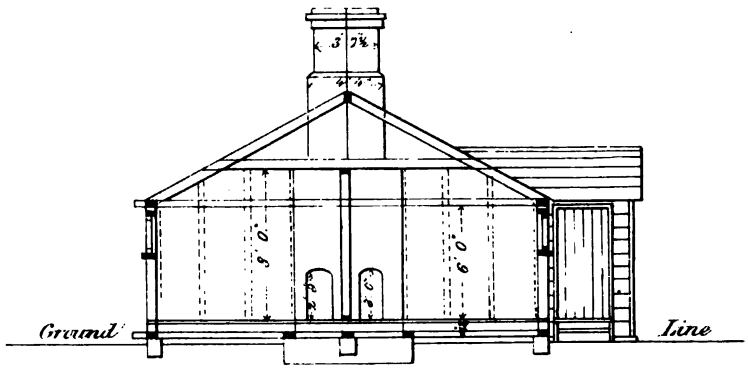
10 5 0

QUARTERS

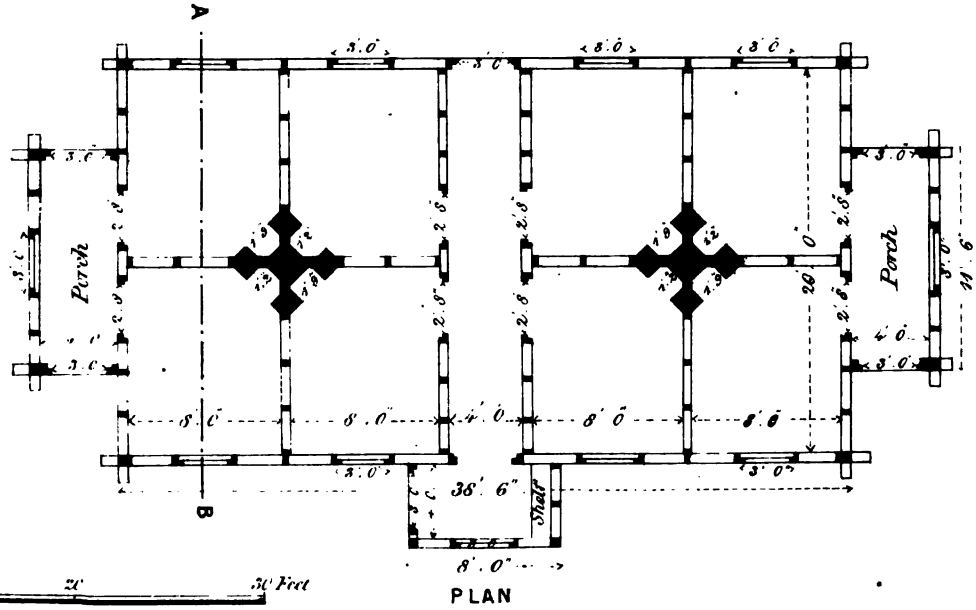
HUT FOR EIGHT OFFICERS



ELEVATION



SECTION ON A.B.

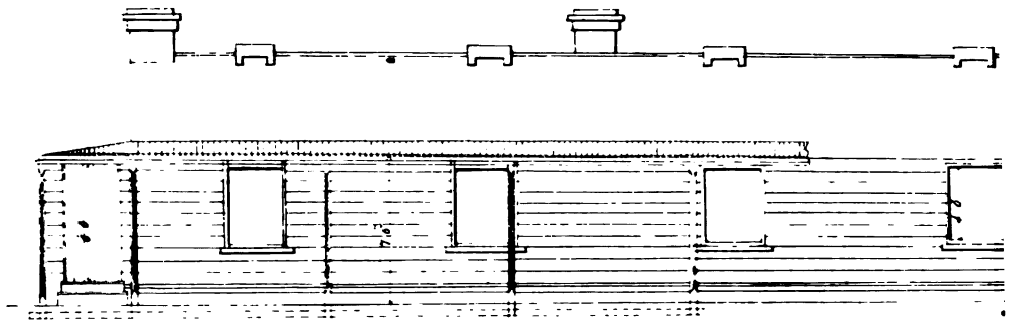


PLAN

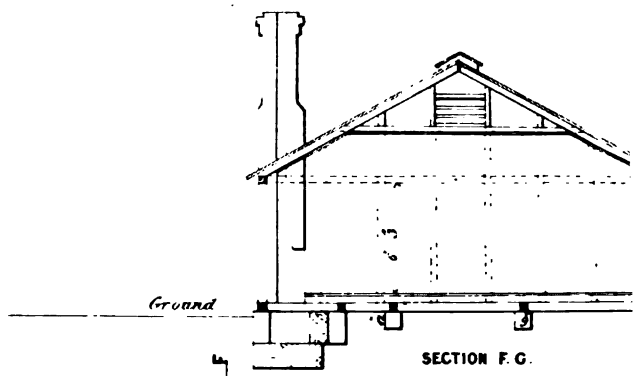
E. J. Sharp, Lith. 9 Dame St. Dublin

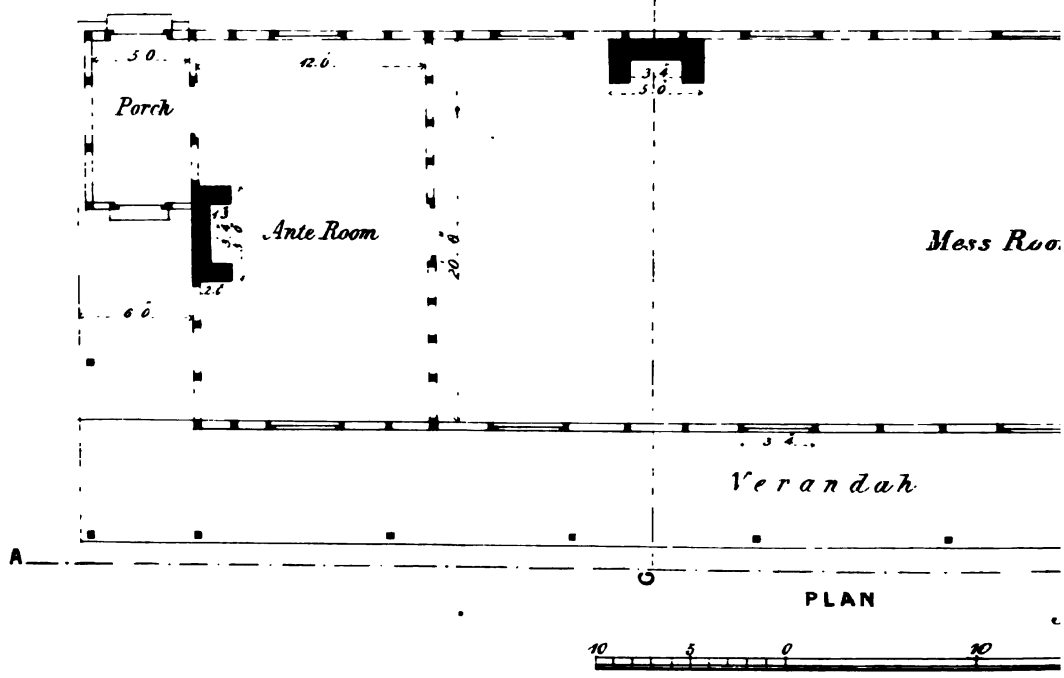
OFFICERS

OFFICERS MES



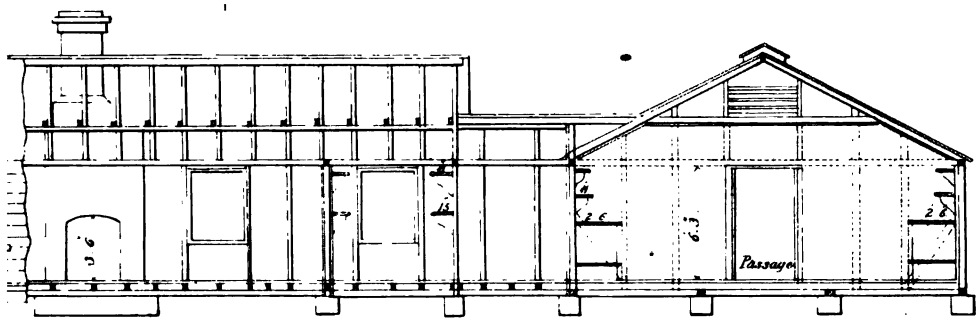
ELEVATION AN



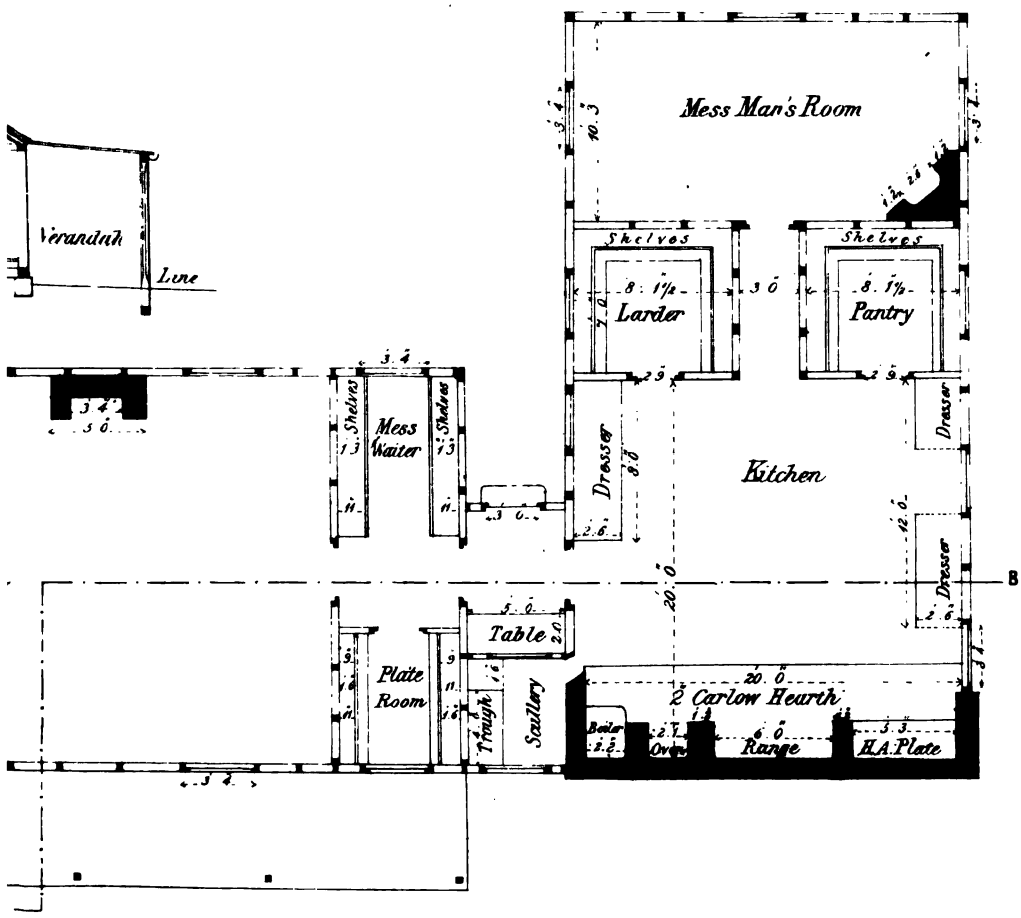


QUARTERS

ESTABLISHMENT



SECTION A.B.



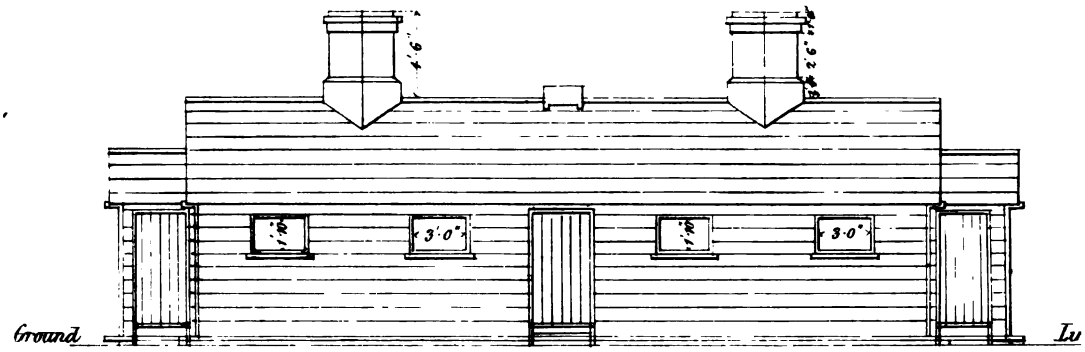
Scale.

20 30 40 Feet

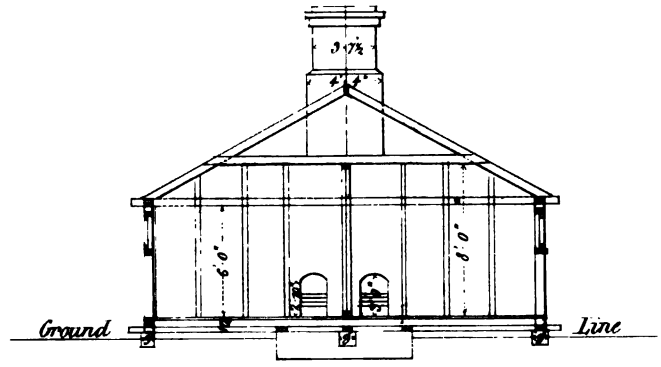
E. J. Harty, 9, Dame St. Dublin, Lith.

OFFICERS

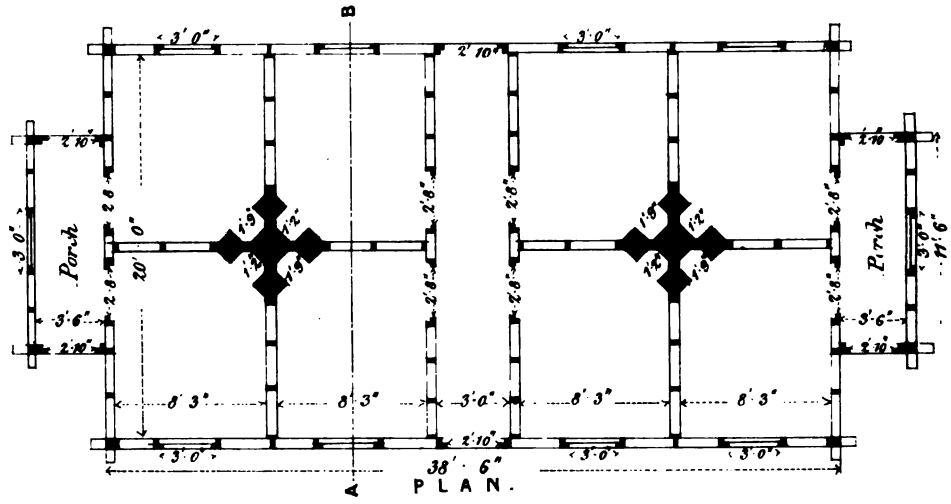
HUT FOR OFFICERS SERVANTS.



ELEVATION.



SECTION ON A.B.

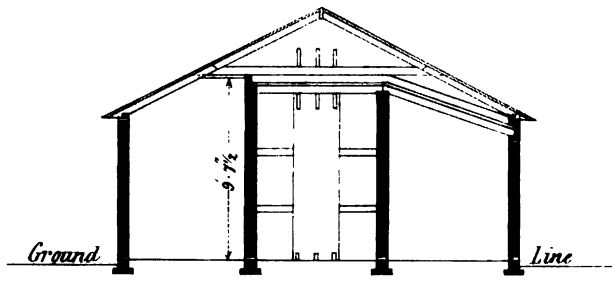


PLAN.

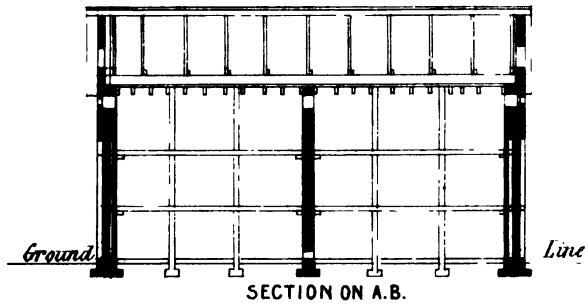
Sca

QUARTERS.

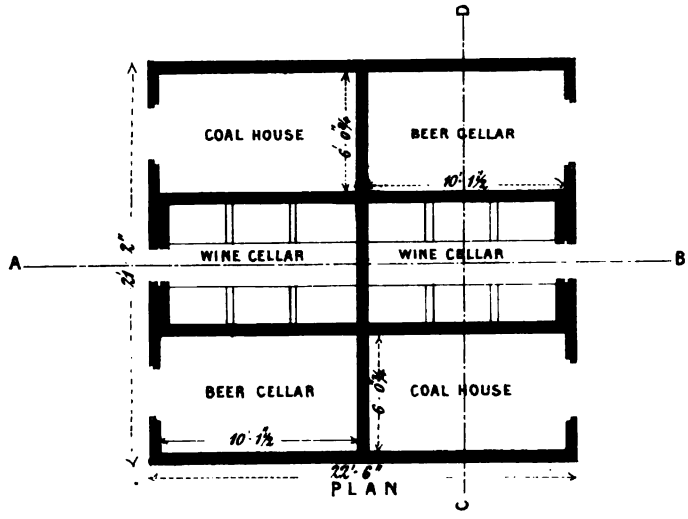
WINE, BEER, AND COAL CELLAR.



SECTION ON C.D.



SECTION ON A.B.



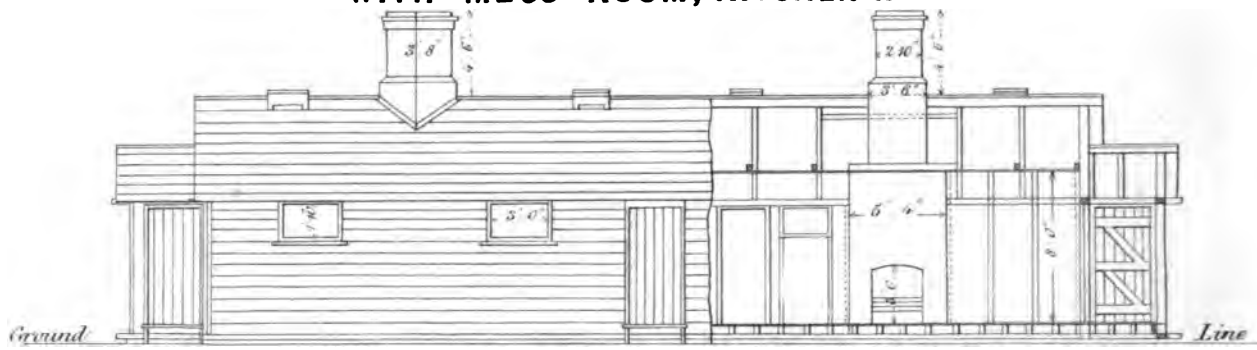
PLAN

0 2' 30 Feet

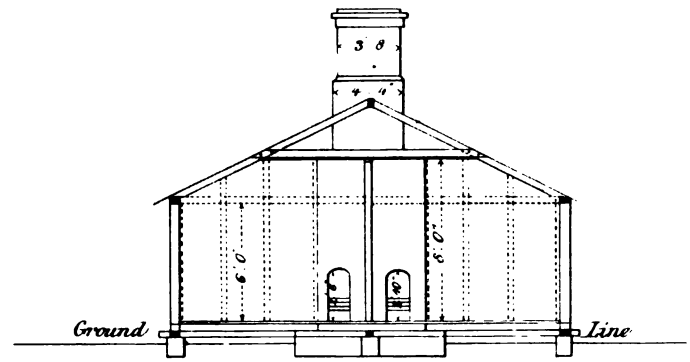
F.J. Barry, Lith. 3, Dame St. Dublin.

SOLDIER

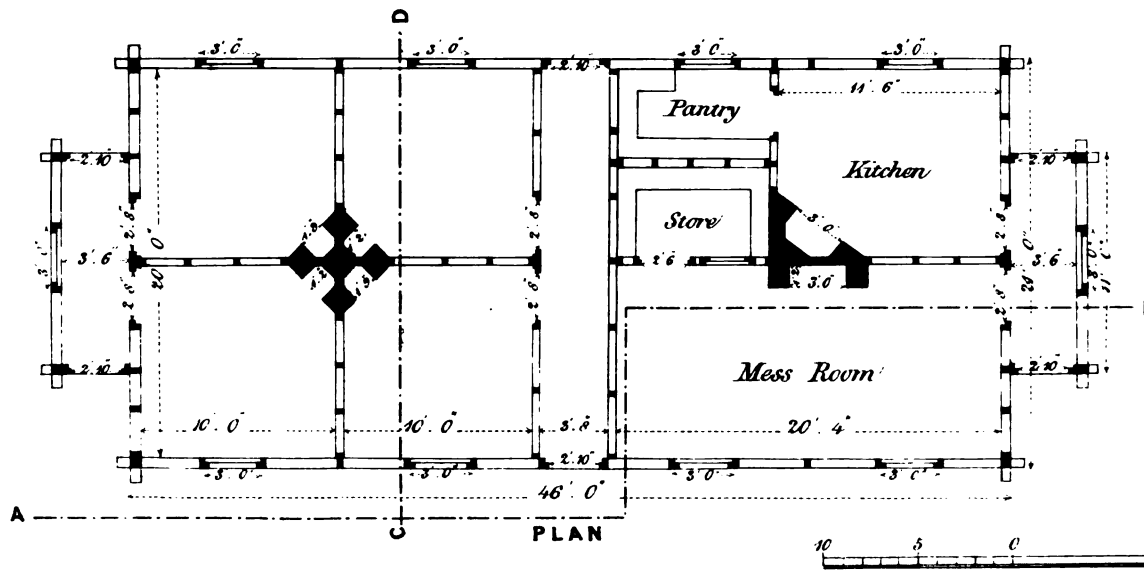
HUT FOR FOUR STAFF SERGEANTS WITH MESS-ROOM, KITCHEN &c



ELEVATION AND SECTION ON A.B.



SECTION ON C.D.



PLAN

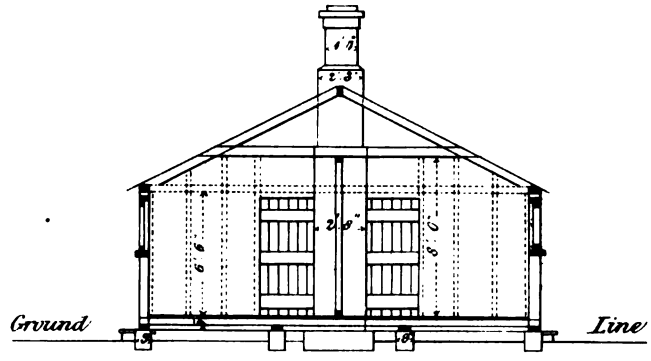
Sca

10 5 0

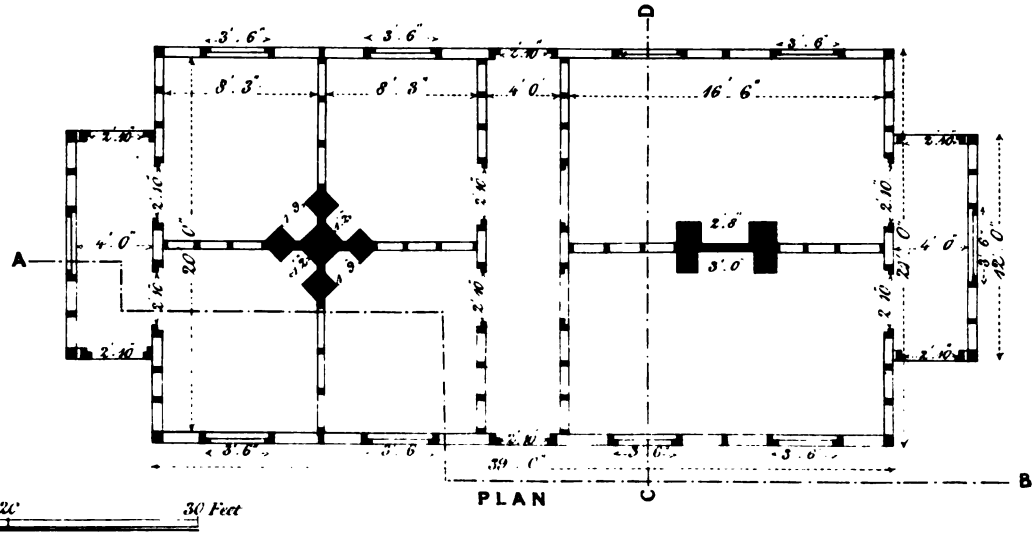
ıS QUARTERS.

HUT FOR SIX SERGEANTS.

ELEVATION AND SECTION ON A.B.



SECTION ON C.D.

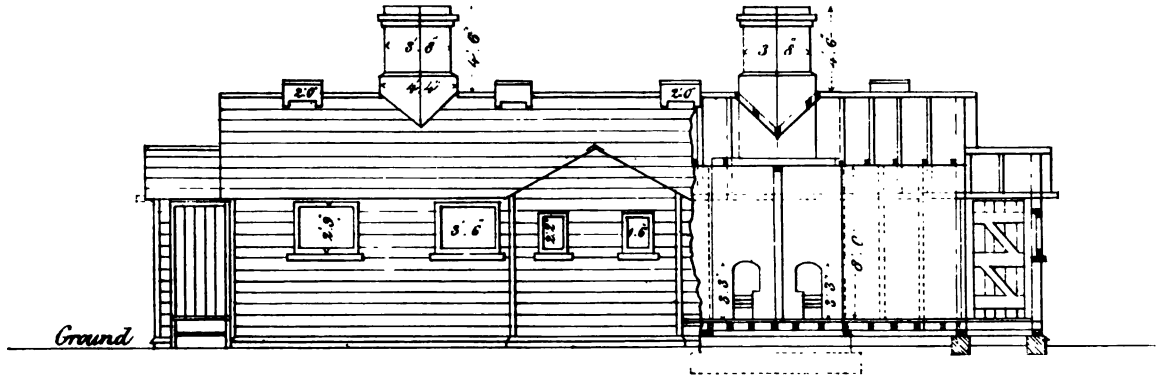


PLAN

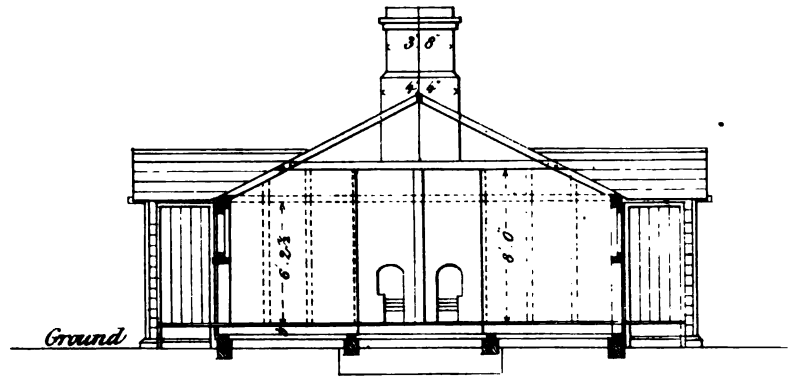
20 30 Feet

J. J. Harty, Lith. 9, Dame St. Dublin

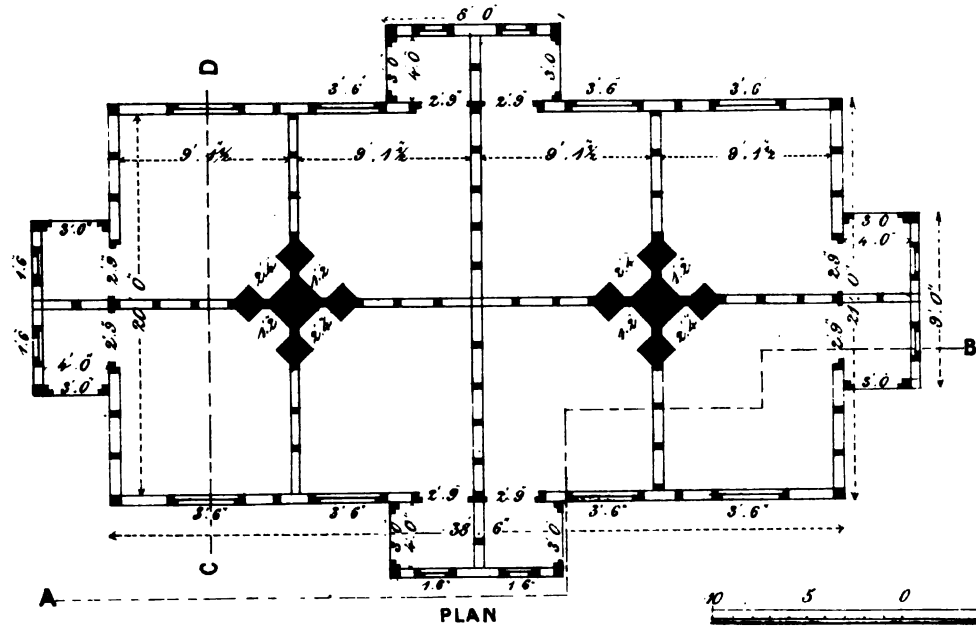
HUT FOR EICHT SERGEANTS SOLDIERS C



ELEVATION AND SECTION ON A.B.



ELEVATION AND SECTION ON C.D.

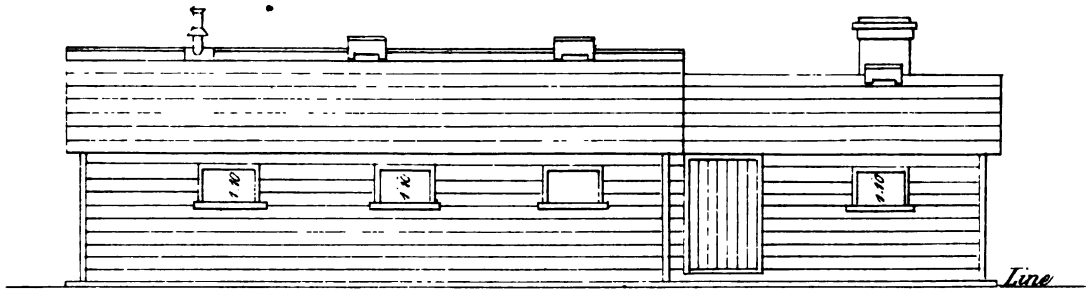


PLAN

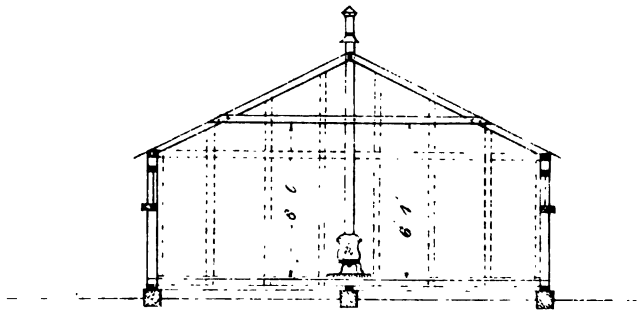
Scale 10 5 0 10

UARTERS

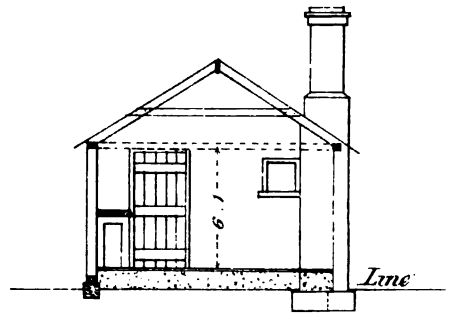
SERGEANTS MESS ESTABLISHMENT



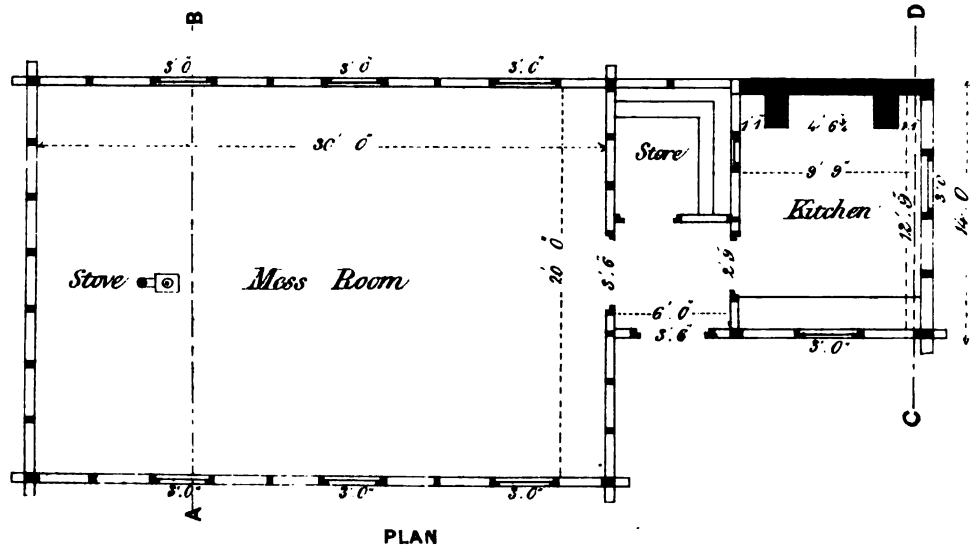
ELEVATION



SECTION ON A.B



SECTION ON C.D



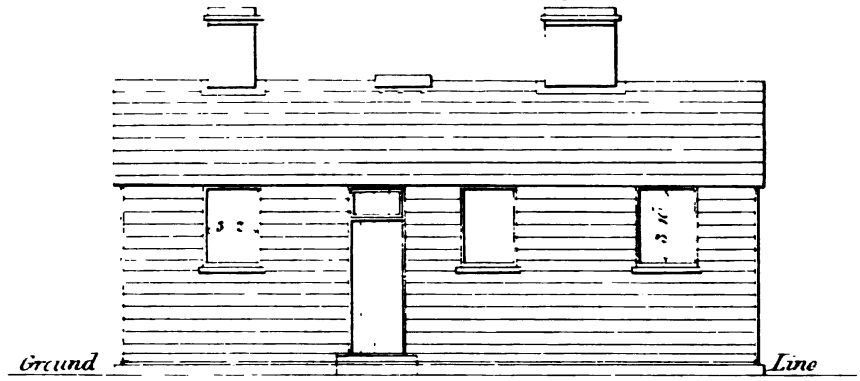
PLAN

20 30 Feet

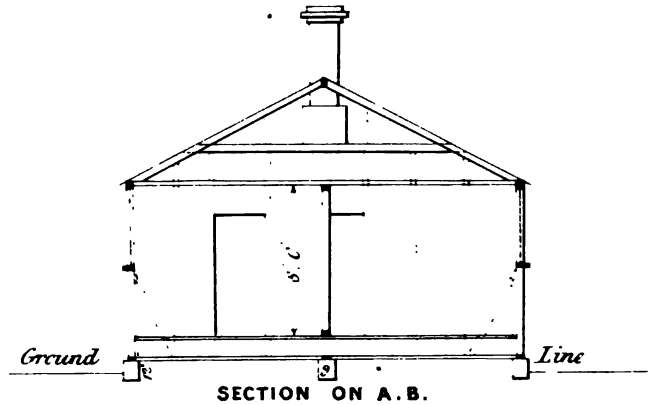
F. J. Henry, Lith. 9. Dame St. Dublin

SOLDIERS

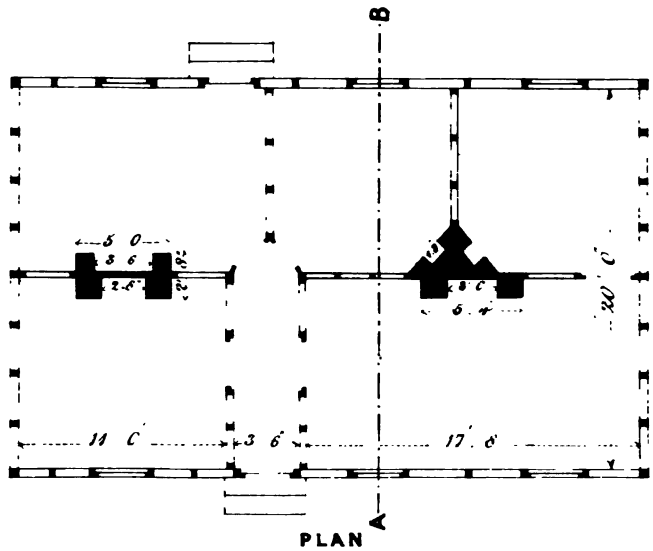
PROVOST SERJEANTS HUT



ELEVATION



SECTION ON A.B.



PLAN

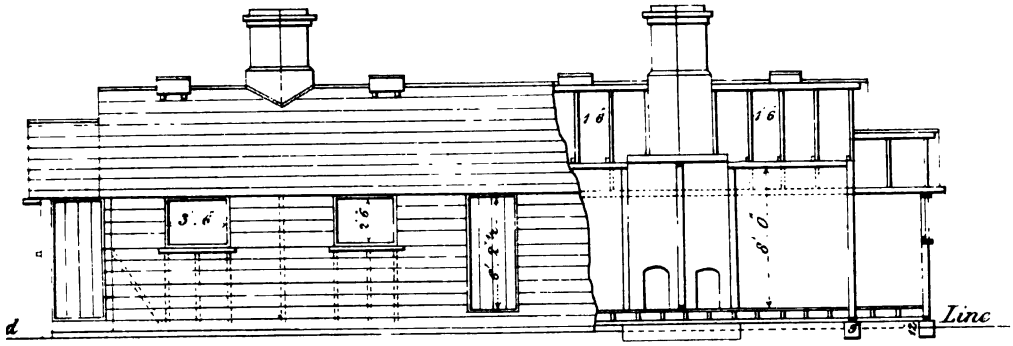
A –

Scal

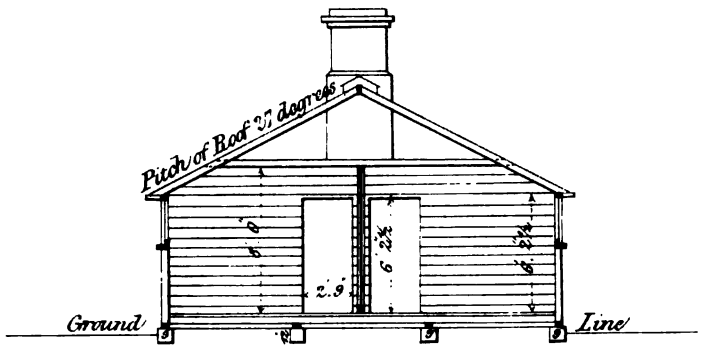
10 5 0 10

QUARTERS

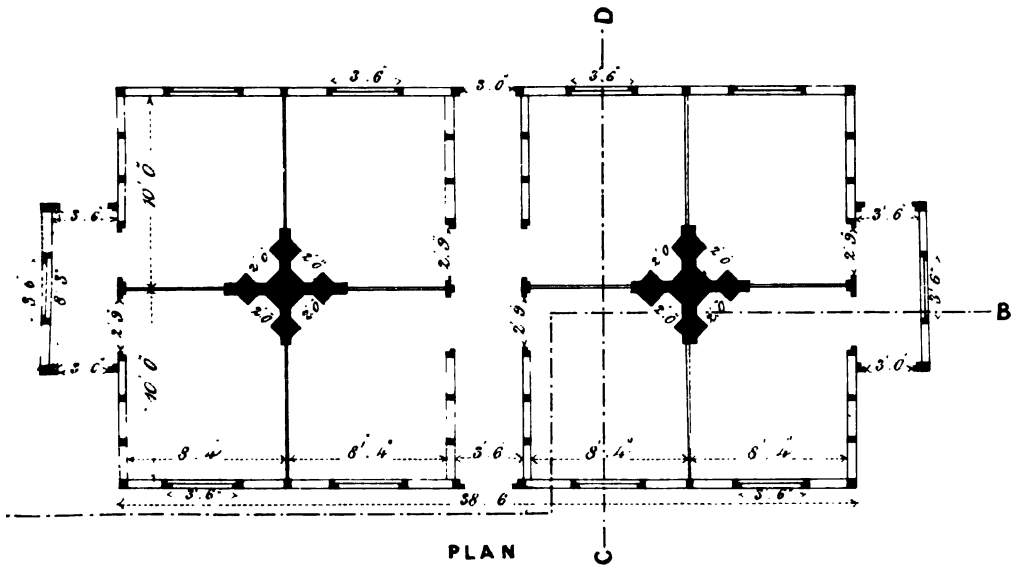
HUT FOR MARRIED MEN



ELEVATION AND SECTION ON A.B.



SECTION ON C.D.



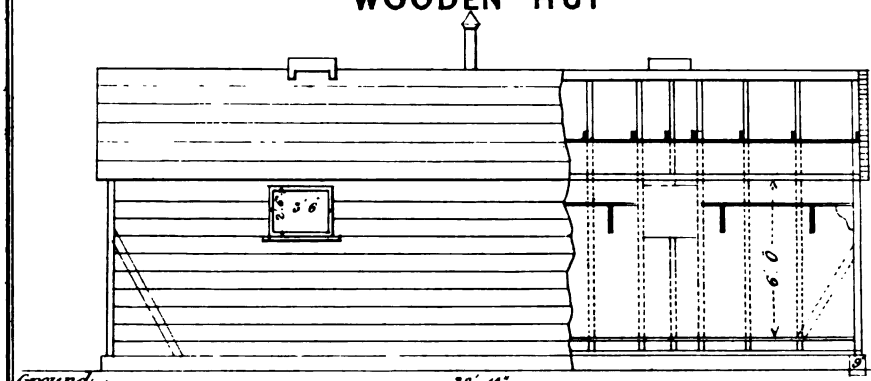
PLAN

20 30 40 Feet

F J Havy. Lith. 9 Dame St. Dublin

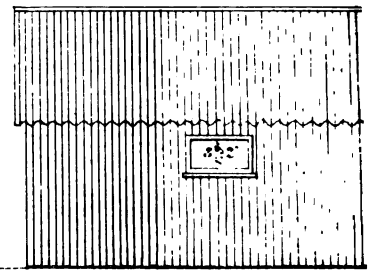
SOLDIERS

WOODEN HUT

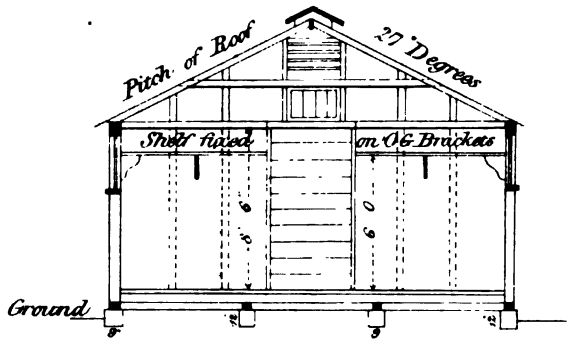


ELEVATION AND SECTION

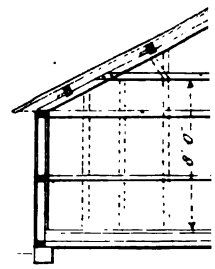
HUT WITH CORRI SIDES



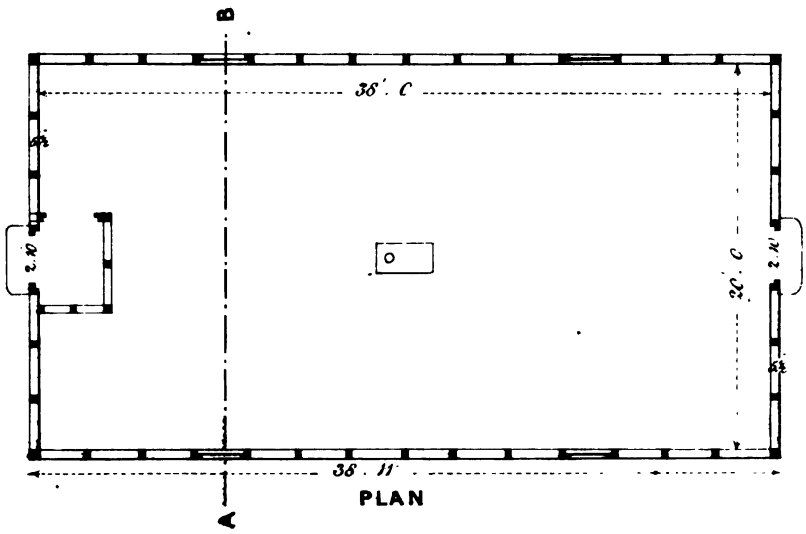
ELEVATION AN



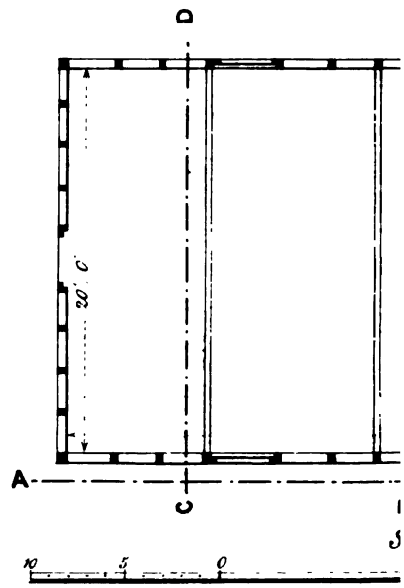
SECTION ON A.B.



SECTI



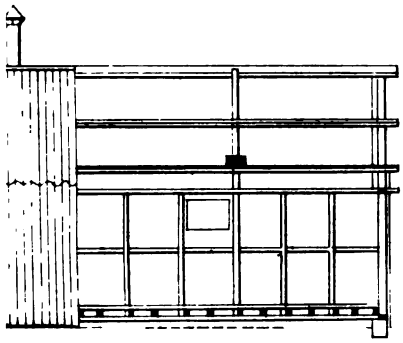
PLAN



NOTE. Each hut is constructed to accommodate 25 men:

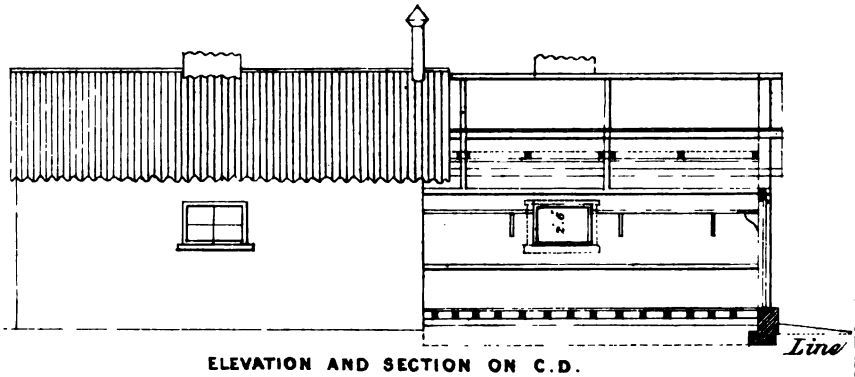
QUARTERS

GATED SHEET IRON
ND ROOF

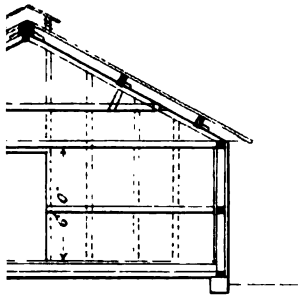


SECTION ON A.B.

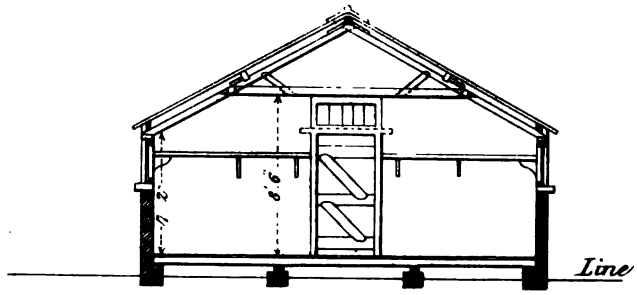
BUILDING WITH BRICK WALLS
AND IRON ROOF



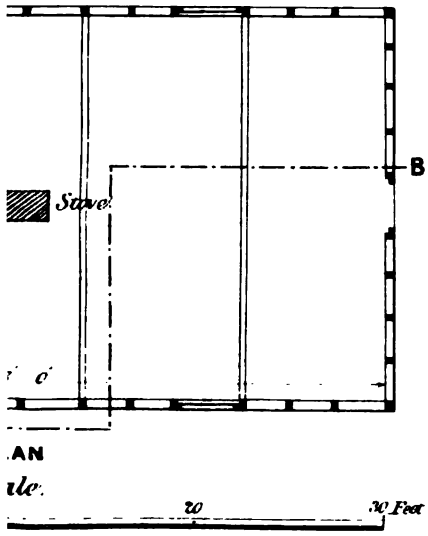
ELEVATION AND SECTION ON C.D.



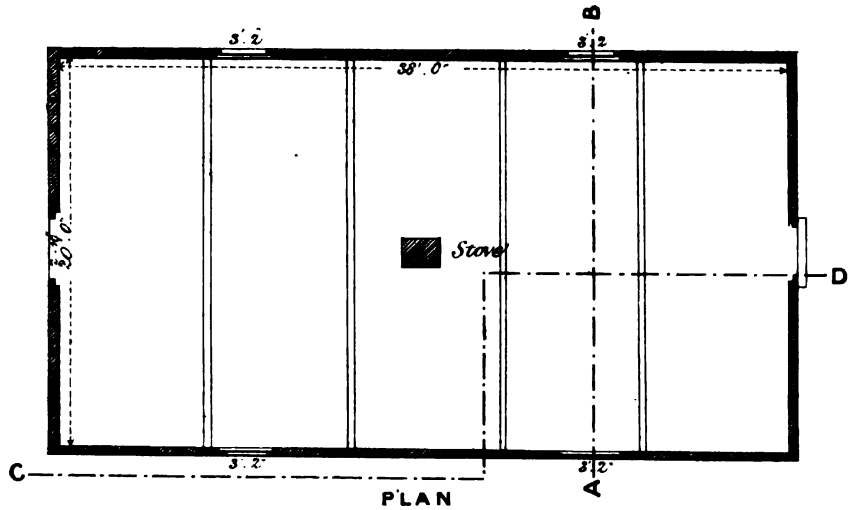
N ON C.D.



SECTION ON A.B.



AN



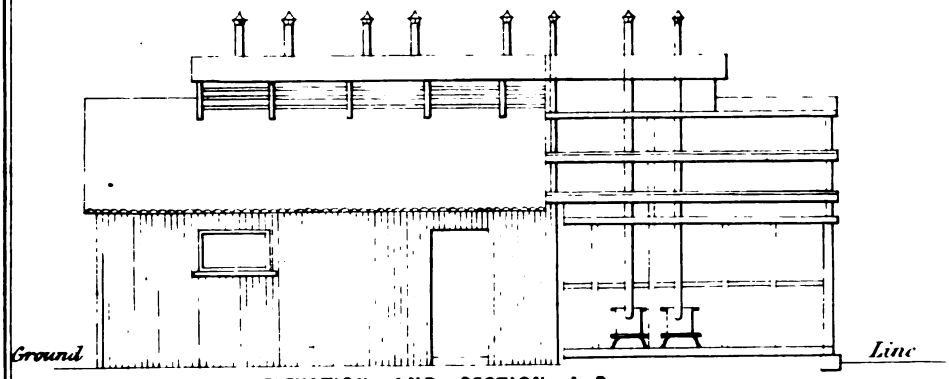
PLAN

NOTE. These huts are placed at intervals between the wooden huts and are designed to act as fire proof barriers.

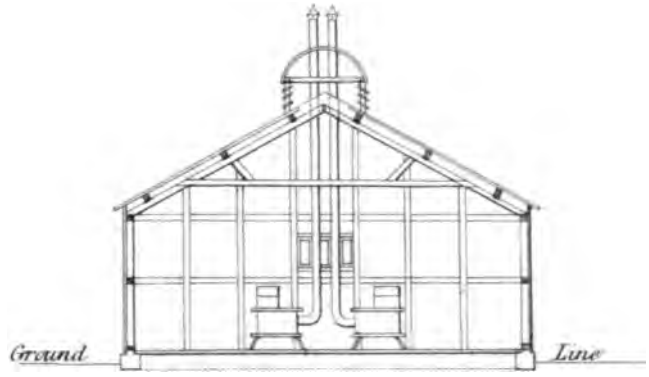
E.J Harty Lith 9 Dame St Dublin

SOLDIERS Q

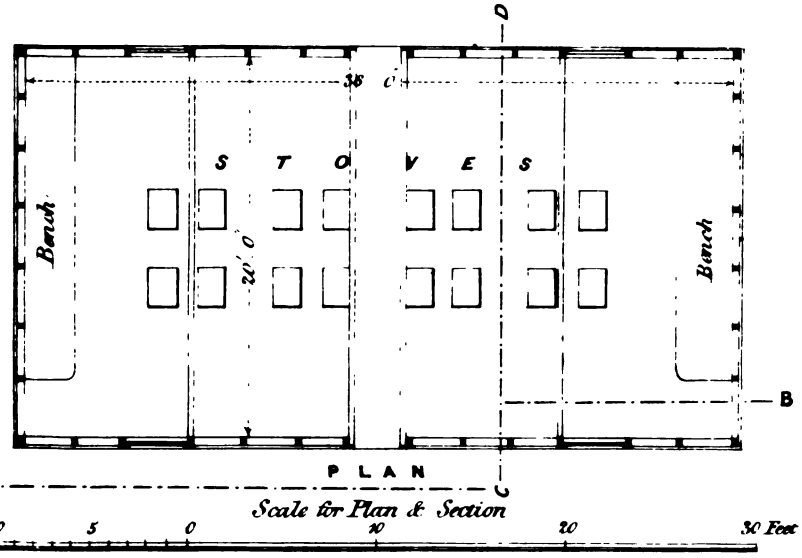
COOKING HOUSE



ELEVATION AND SECTION A.B.



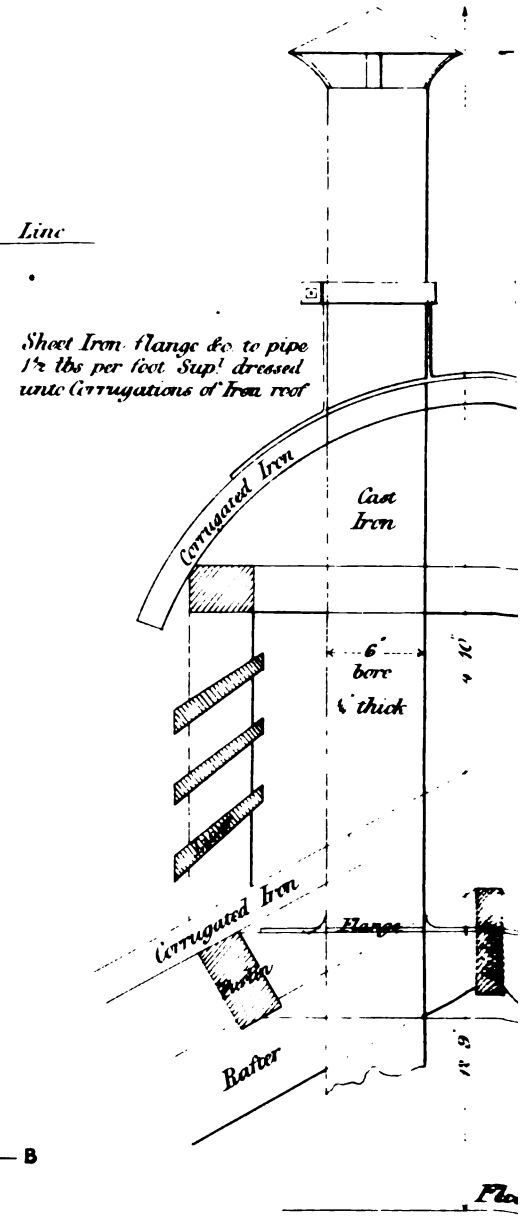
SECTION ON C.D.



PLAN

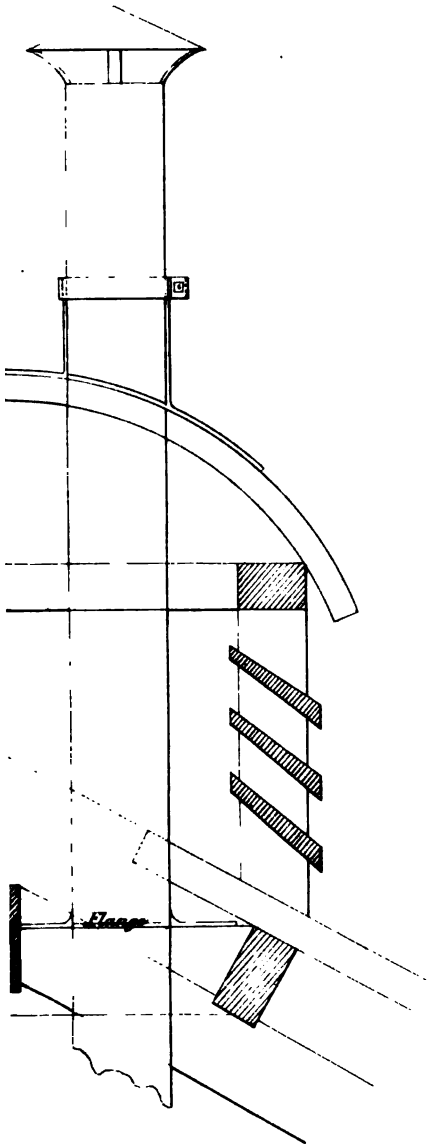
Scale for Plan & Section

10 5 0 10 20 30 Feet

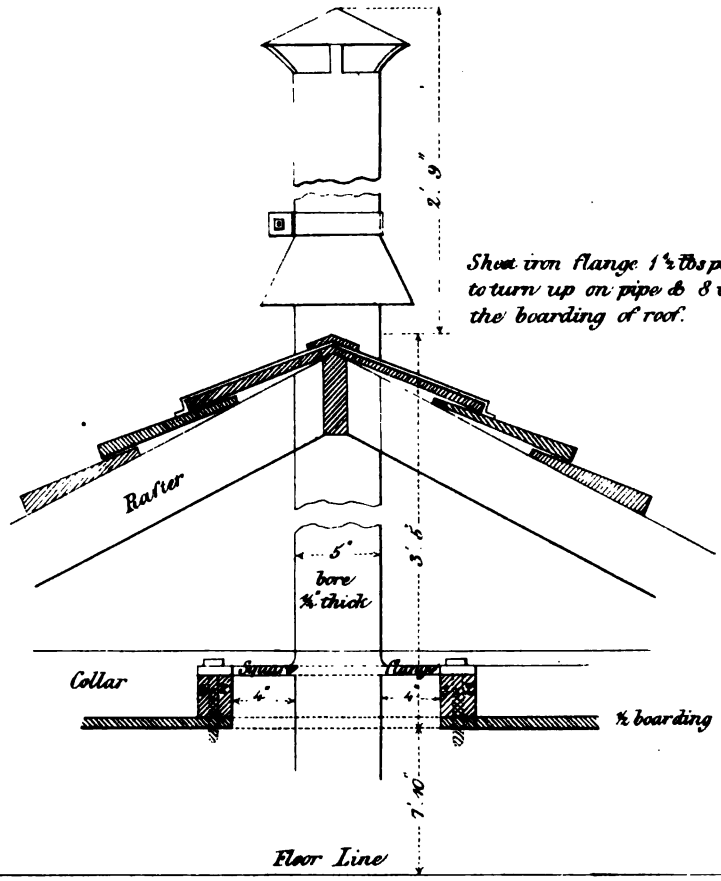


QUARTERS.

STOVE PIPES AND FIXINGS



Cast Iron Stove Pipe for Soldiers Rooms.



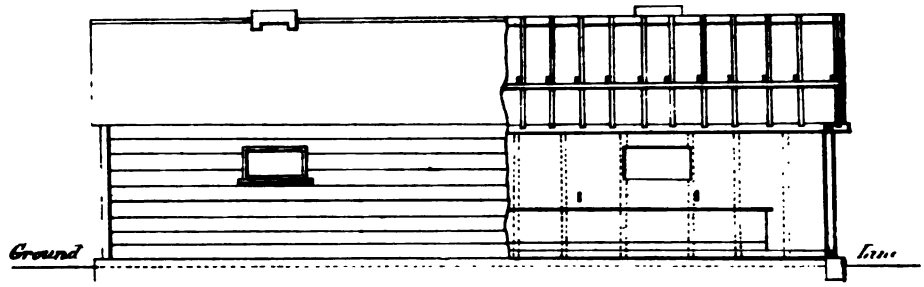
Scale for Details

12 6 0 1 2 3 Feet

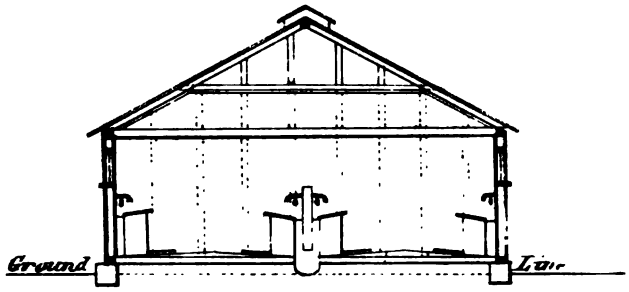
E.J. Hardy, Lith. 9, Dame St. Dublin.

SOLDIERS

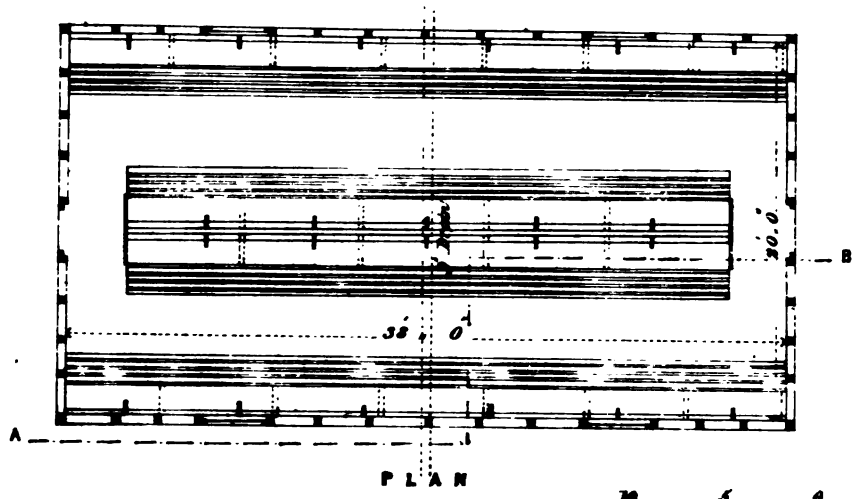
ABLUTION HOUSE



ELEVATION AND SECTION ON A.B



SECTION ON C.D.

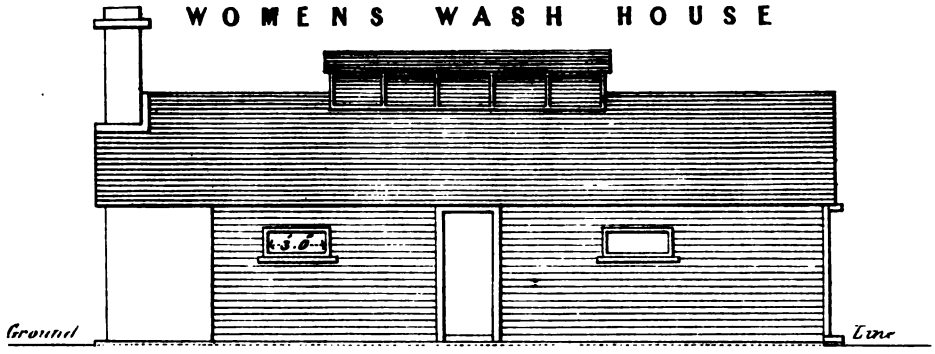


PLAN

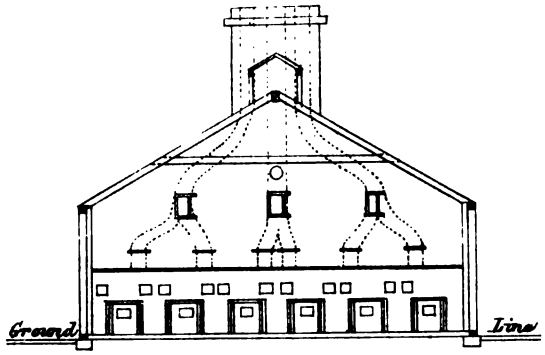
Scale

QUARTERS.

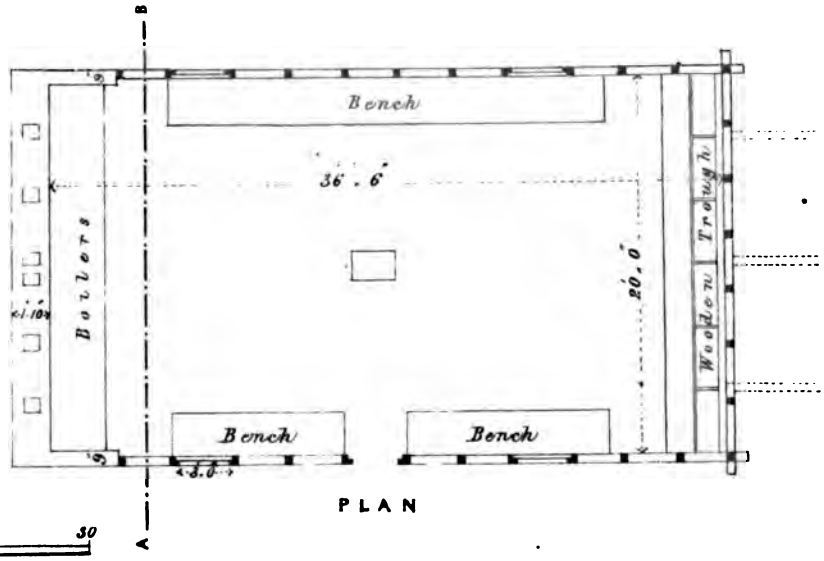
WOMENS WASH HOUSE



ELEVATION



SECTION ON A.B.



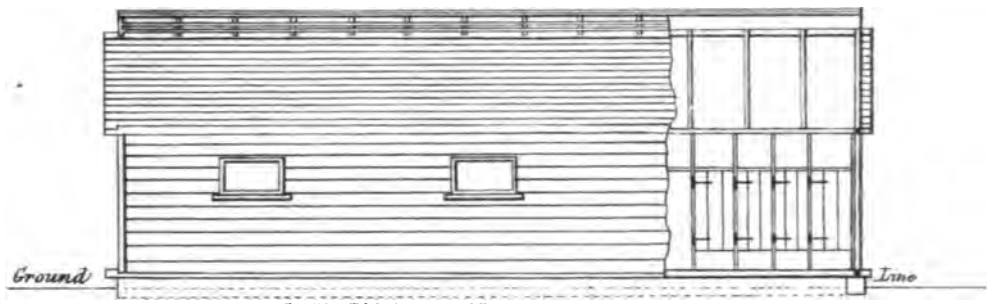
PLAN

20 30

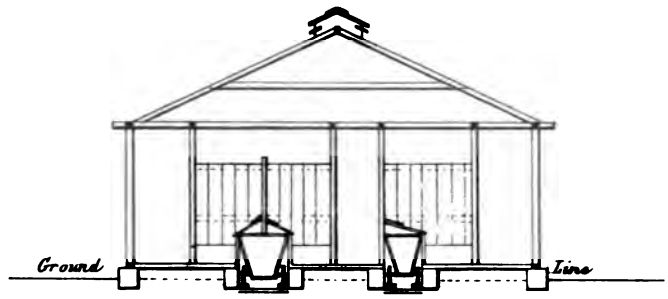
Lith.d at the Ordnance Survey Office, Dublin.

PRI

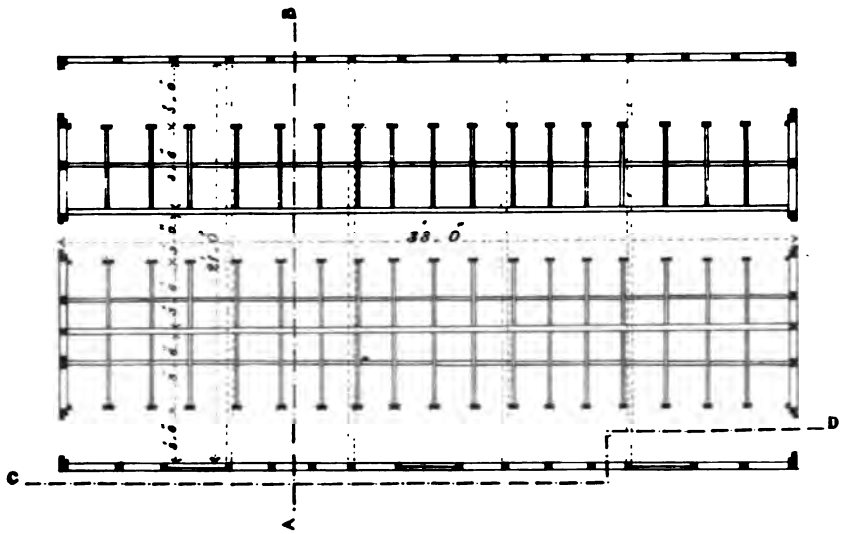
SOLDIERS



ELEVATION AND SECTION ON C. D.



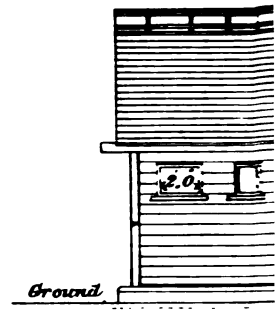
SECTION ON A. B.



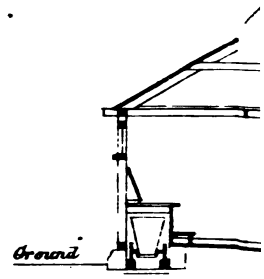
PLAN

Scale

N.C. OFF



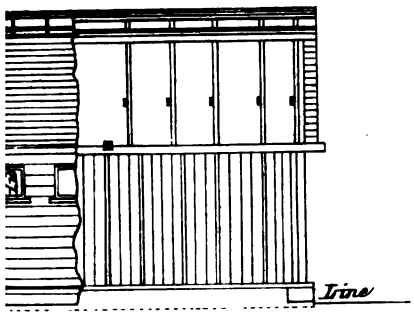
ELEVATI



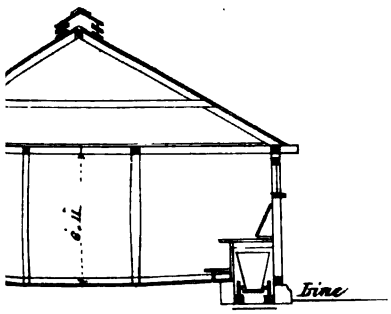
SECT

I E S

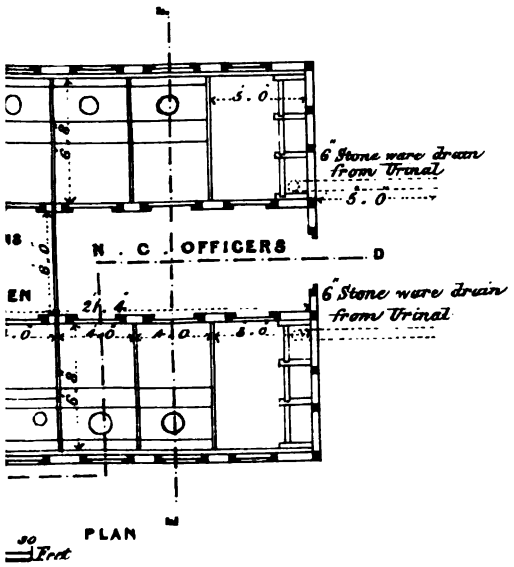
CERS AND WOMENS



ON AND SECTION ON C.D.

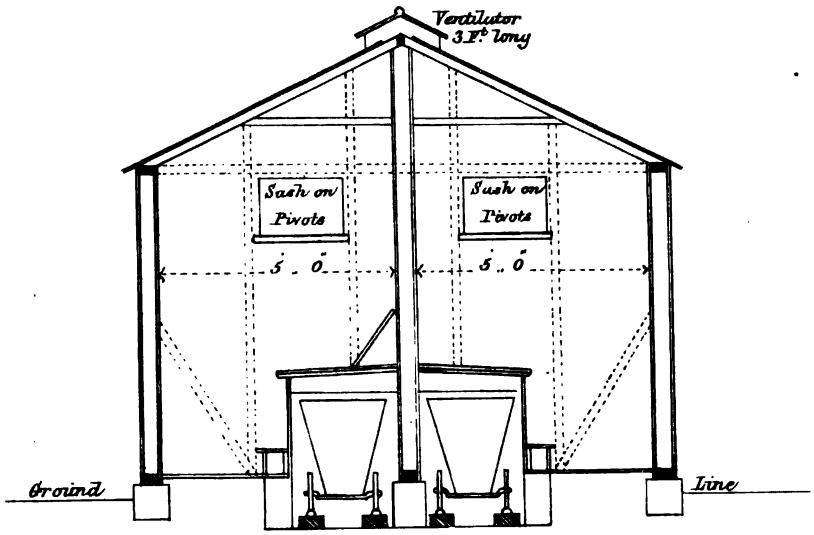


SECTION ON E.F.

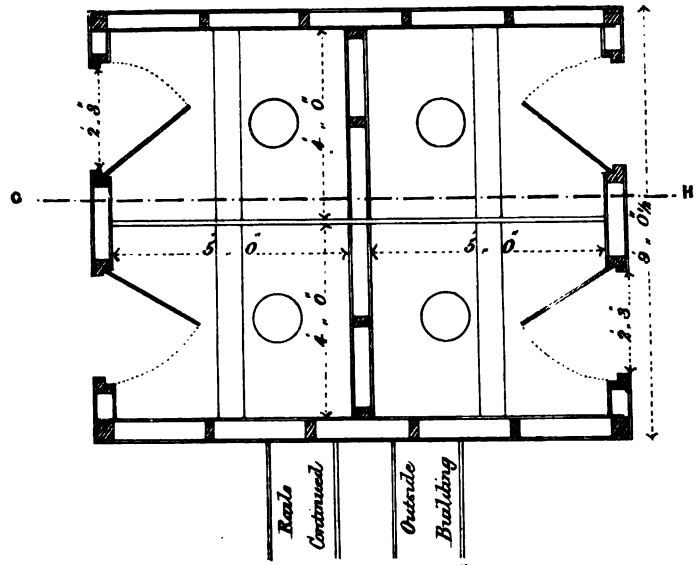


PLAN

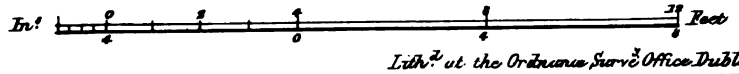
DEPARTMENTS



SECTION ON G.H



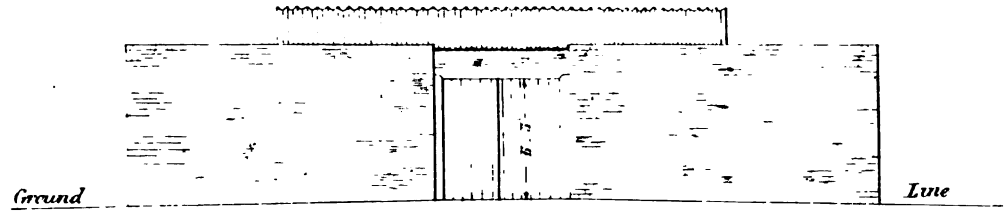
Scale 4′ = 1″.



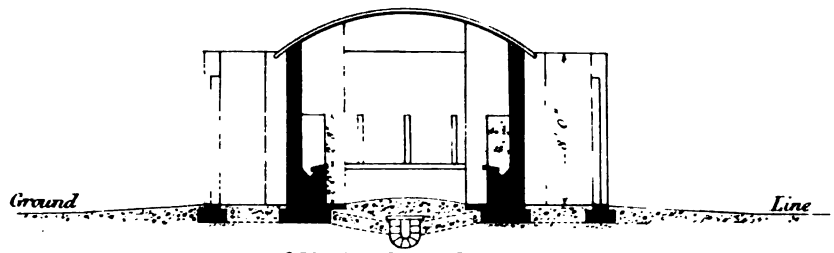
Lith.d at the Ordnance Surv.e Office Dublin.

SOLDIERS Q

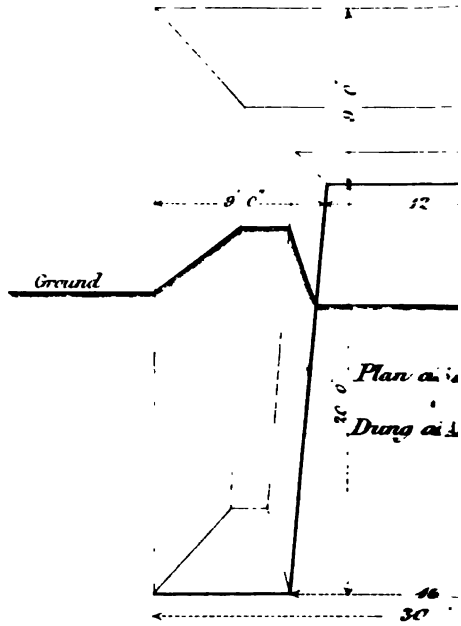
URINALS & DUN

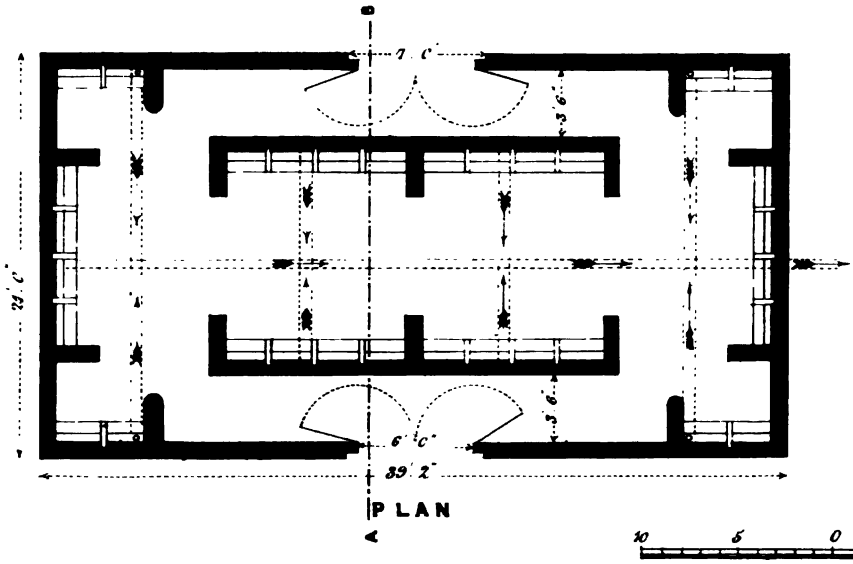


ELEVATION



SECTION ON A.B.



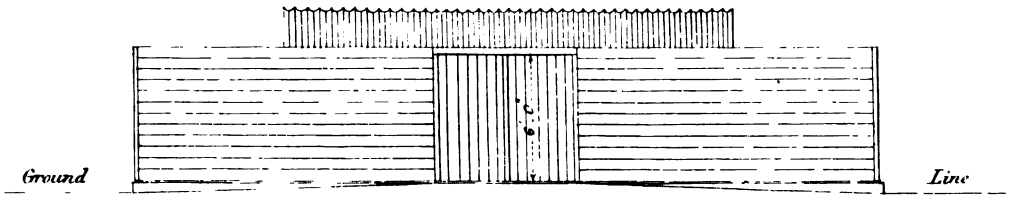


PLAN

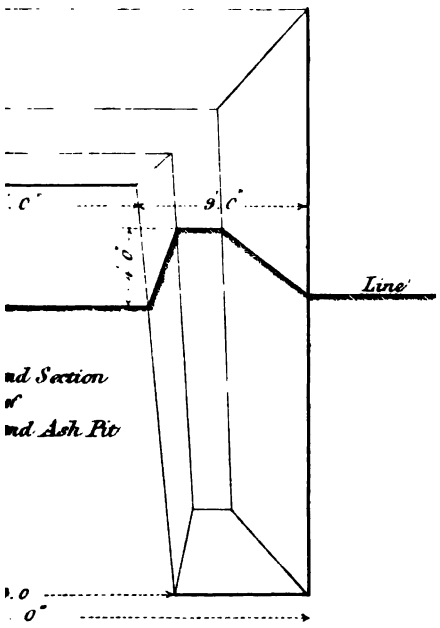
10 5 0 10

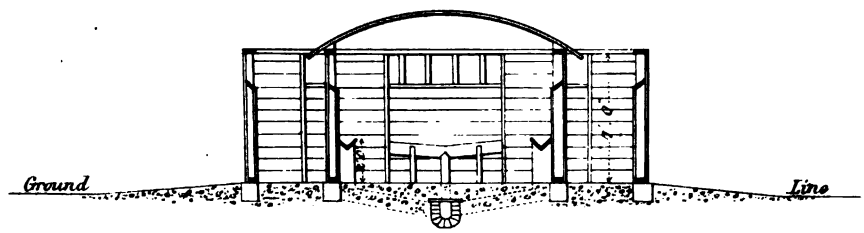
QUARTERS.

C & ASH PITS.

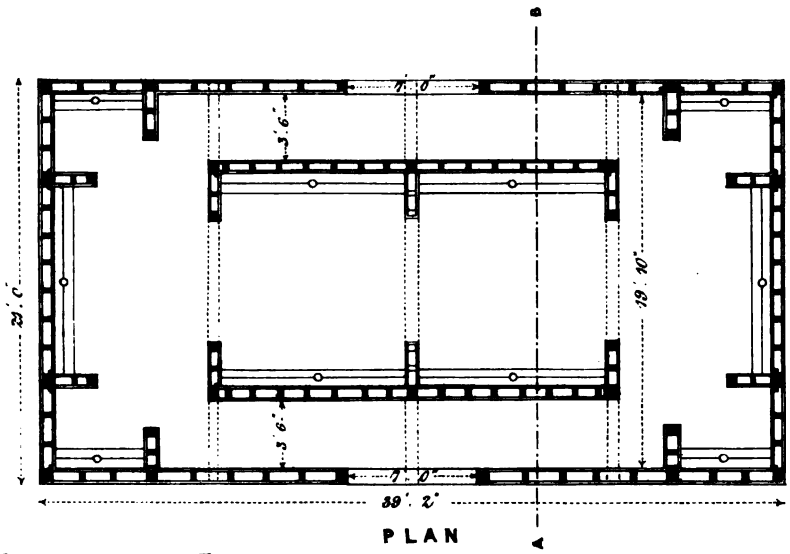


ELEVATION





SECTION ON A.B.



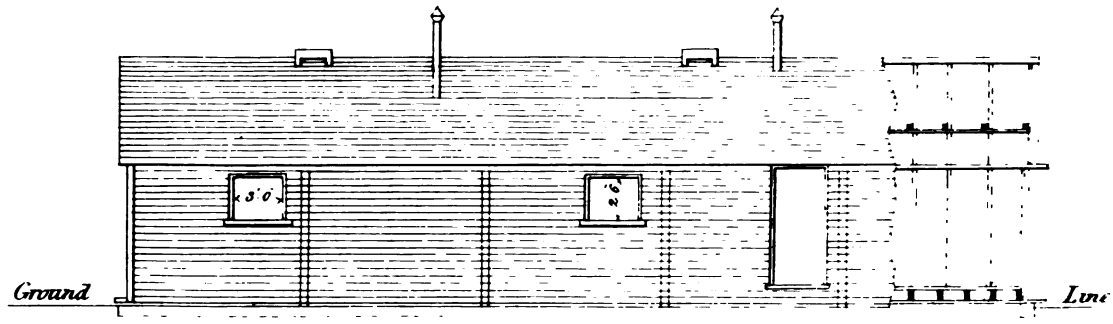
PLAN

ale.

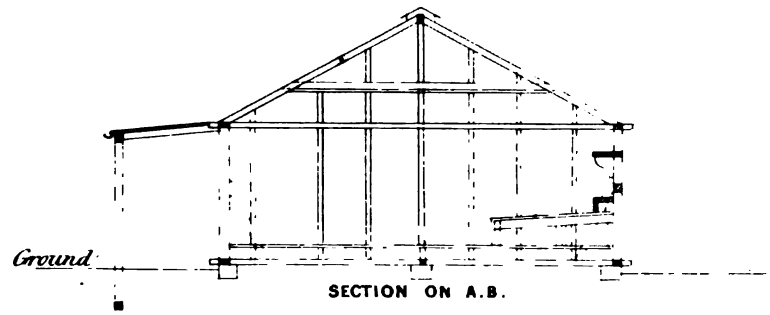
20 30 40 Feet

E.J. Hurly Lith. 9 Dame St. Dublin

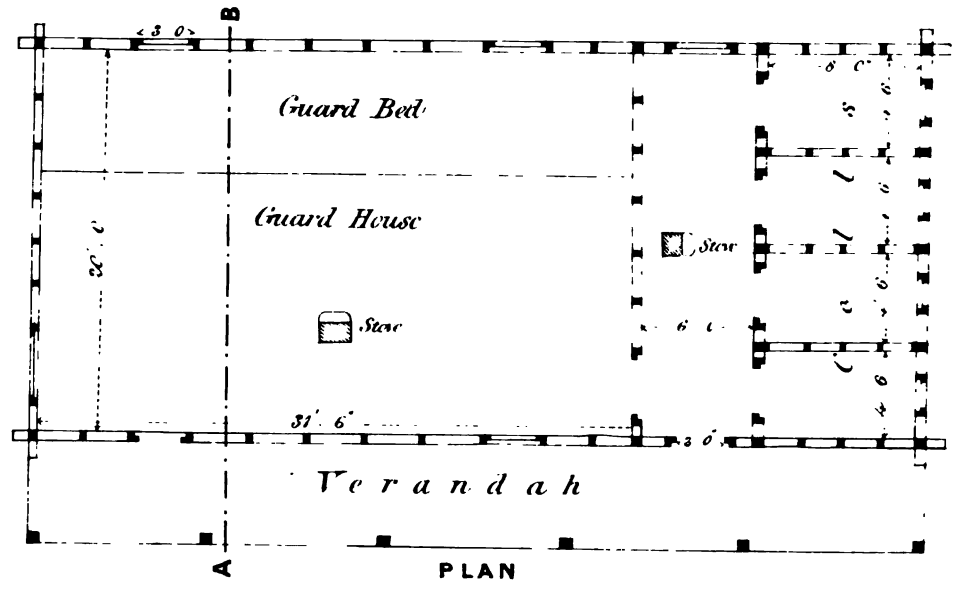
GUARD HOUSE AND CELLS



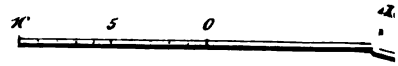
ELEVATION AND SECTION



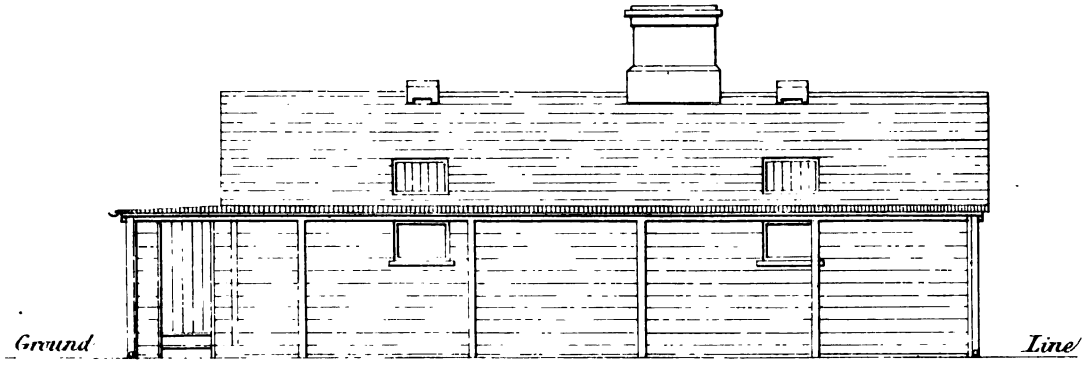
SECTION ON A.B.



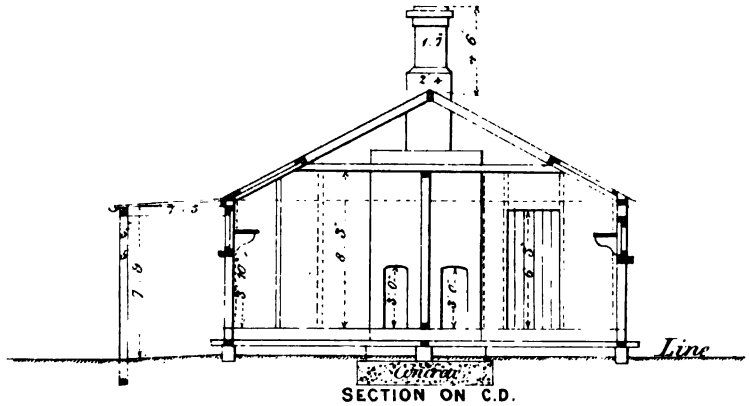
PLAN



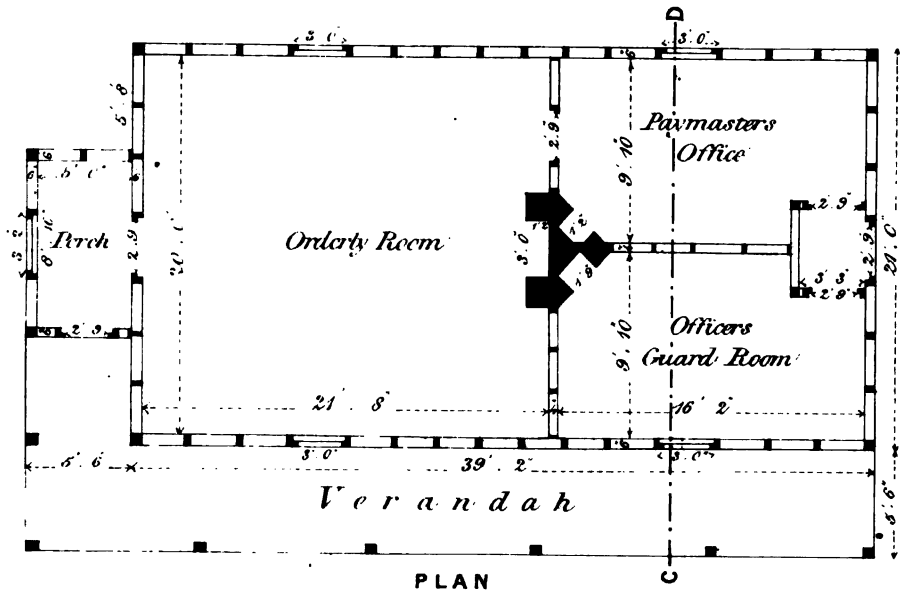
ORDERLY ROOM AND OFFICERS GUARD ROOM



FRONT ELEVATION



SECTION ON C.D.



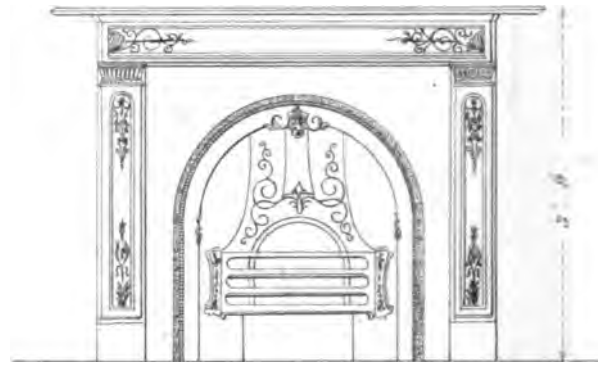
PLAN

Scale.
10 20 30 Feet

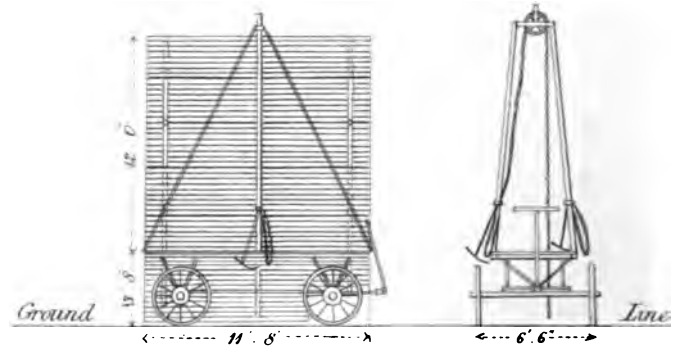
E. J. Hare, Lith. 3. Dame St. Dublin

GRATES, CHIMNEY-PIECES, STO

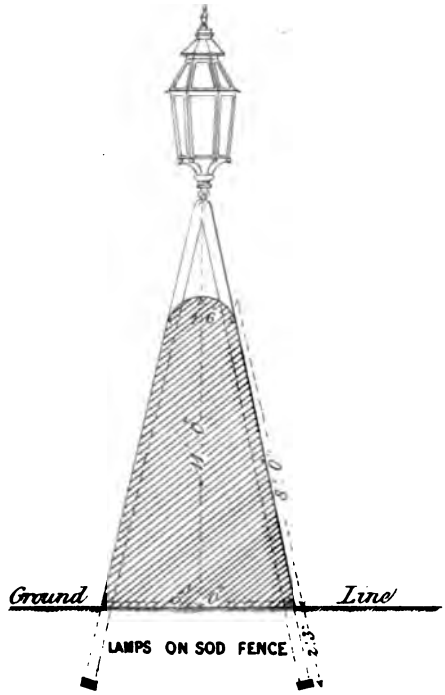
CRATE & CHIMNEY PIECE IN OFFICES



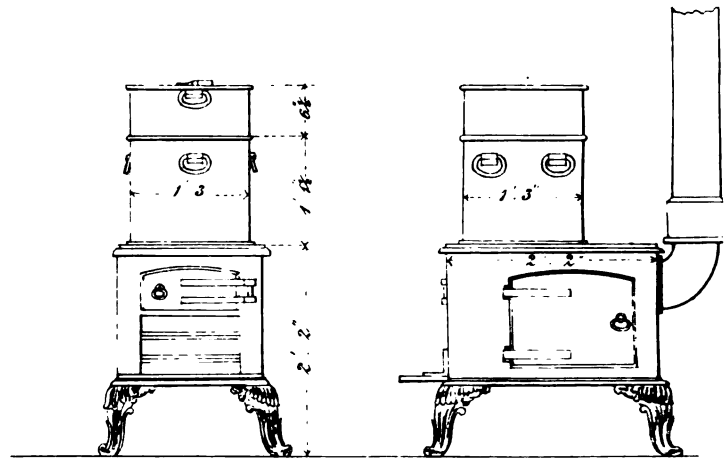
CRATE & CHIMNEY PIECE FOR SITTING ROOMS



SIDE & END ELEVATION OF FOLDING FIRE SCREEN



LAMPS ON SOD FENCE

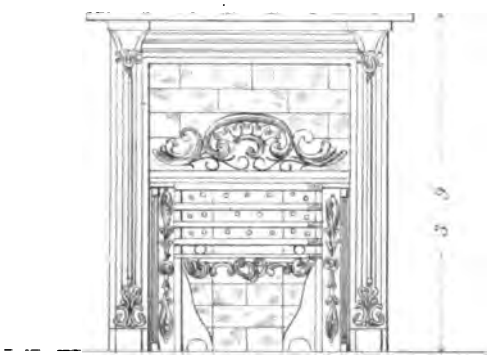


SOLDIERS COOKING STOVE

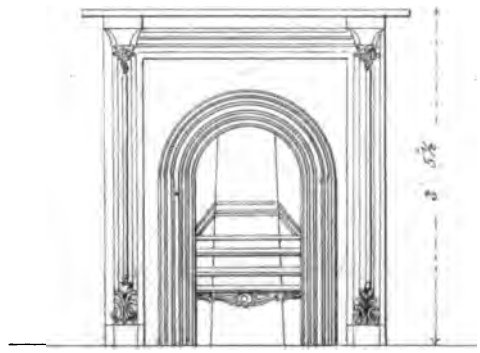
Scale for

0 1 2 3 4

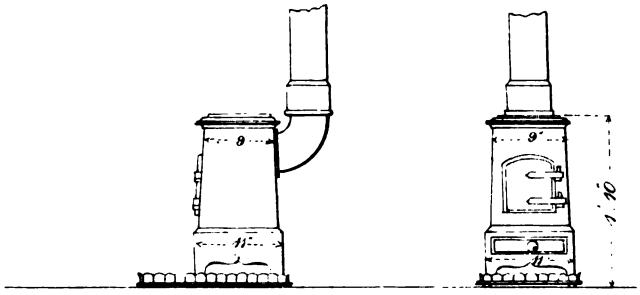
'ES, LAMPS AND FIRE SCREEN



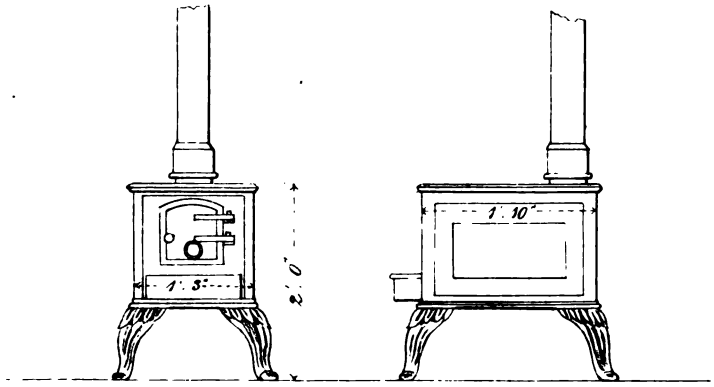
CRATE &c. FOR BED ROOMS



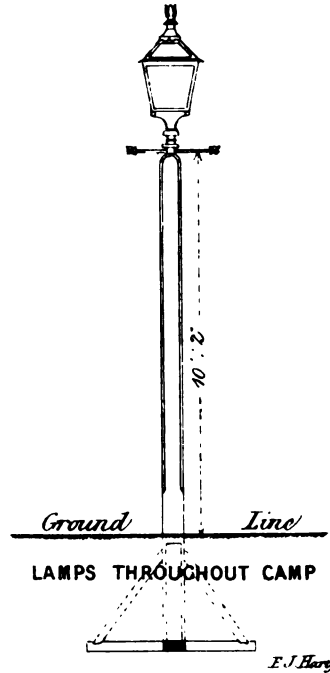
OFFICERS ROOMS



STOVE FOR ORDERLY ROOMS



STOVE IN SOLDIERS QUARTERS



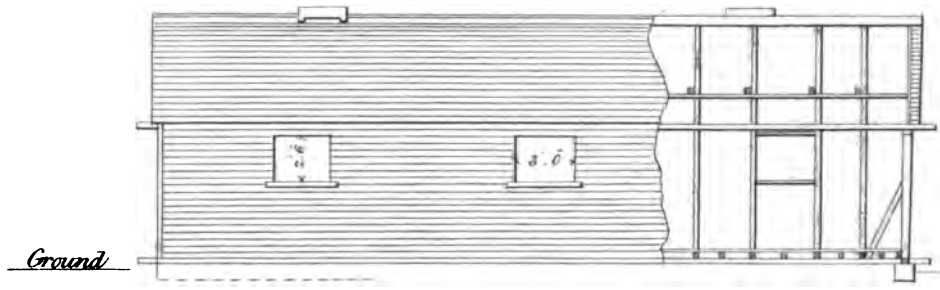
LAMPS THROUGHOUT CAMP

Grates & Stoves

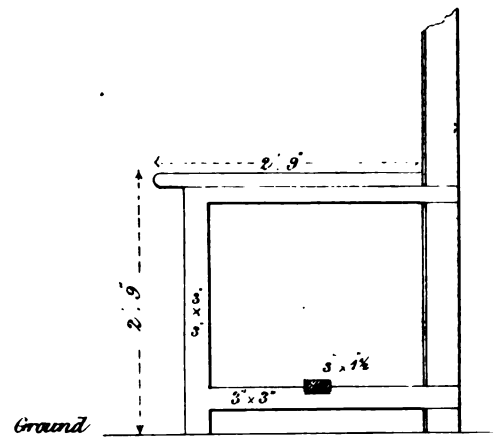
6 7 8 9 10 Feet

E. J. Harty, Lith. 9 Dame St. Dublin

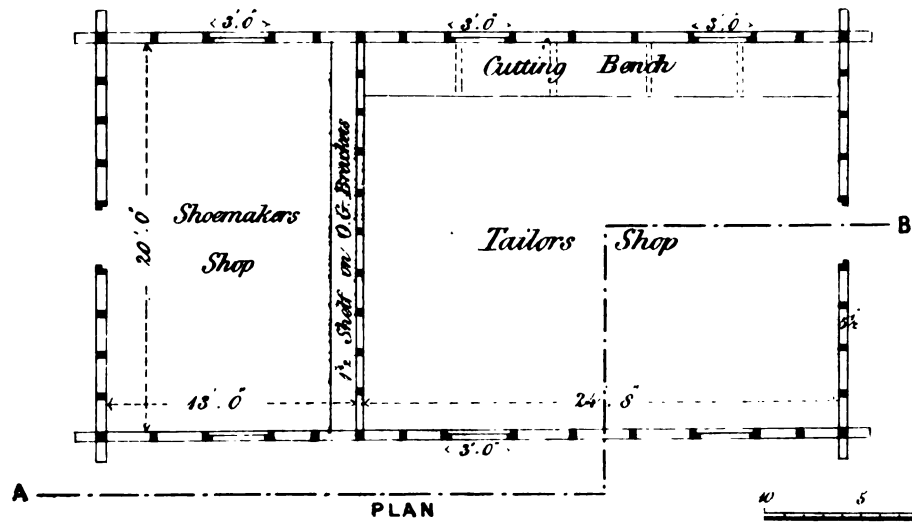
TAILORS' AND SHOEMAKERS' SHOP



ELEVATION & SECTION ON A.B.



SECTION OF BENCH

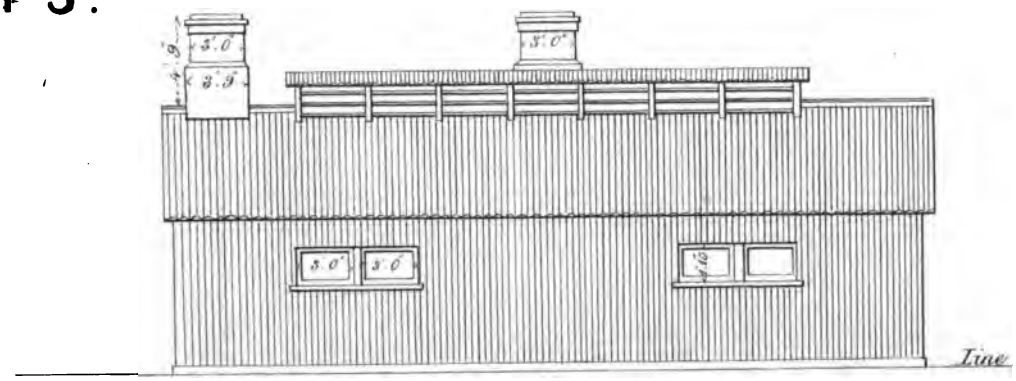


PLAN

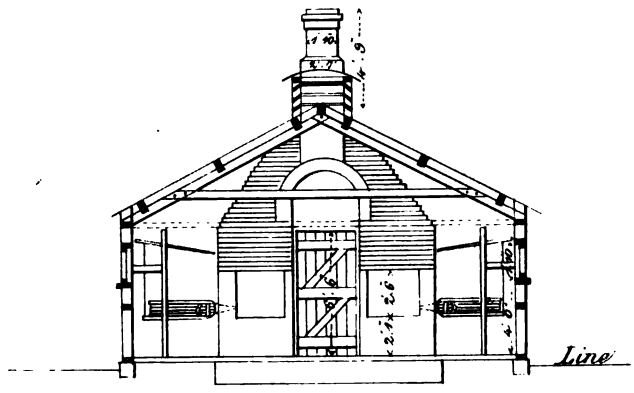
0 5 0

HOPS.

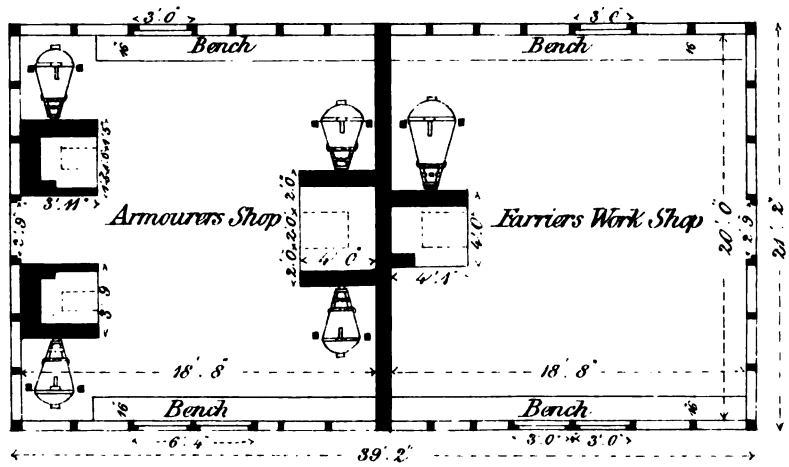
ARMOURERS AND FARRIERS WORKSHOP.



FRONT ELEVATION



SECTION ON A.B.

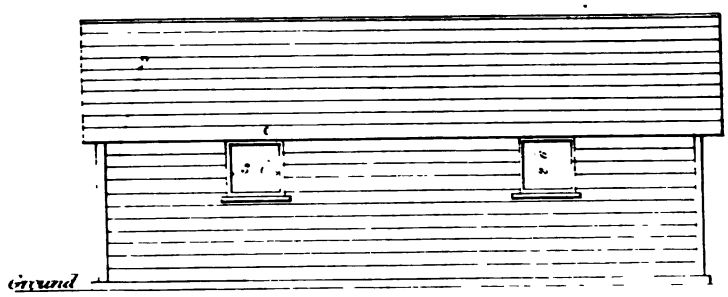


Scale
0 20 30 Feet

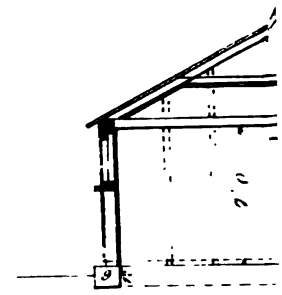
E.J Brown, Lith. 9 Drane St. Dublin

WORKS

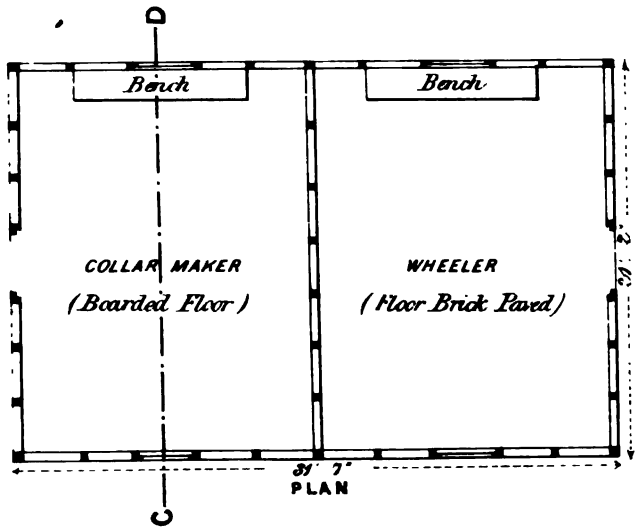
FOR COLLAR MAKER AND WHEELER



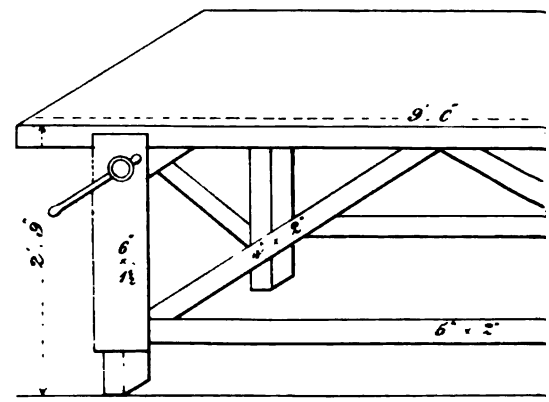
ELEVATION



SECTI



PLAN



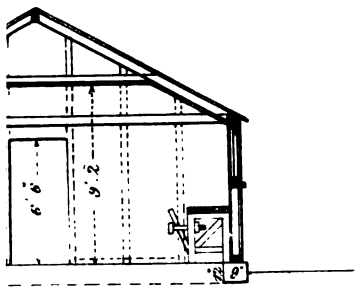
BENCH.

That for the Collar Ma
has no Bench Se

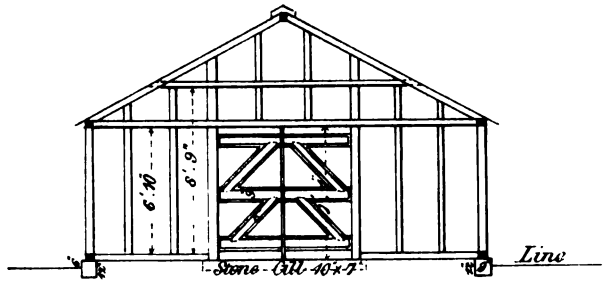
10 5 0

SHOPS.

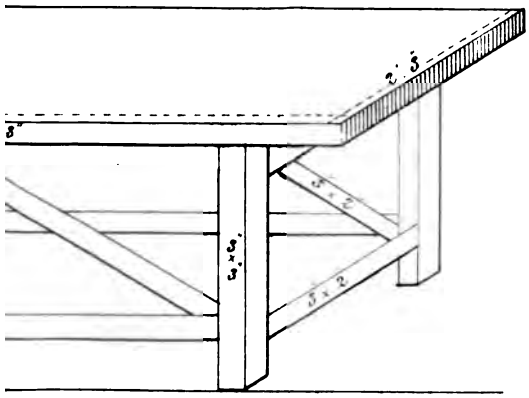
ENCINE HOUSE



ION ON C.D.

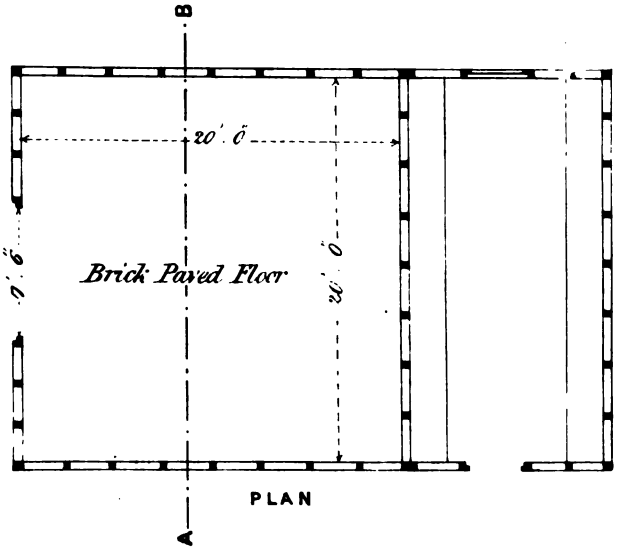


SECTION ON A.B.



Cars Shop
row.

Scale
20 20 30 Feet



PLAN

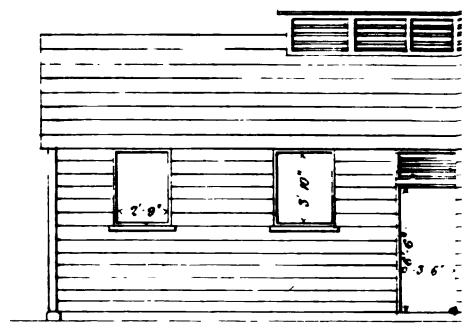
E. Hardy Lith 9 Dame St. Dublin

OFFICERS STABLE AND FORAGE STORE.

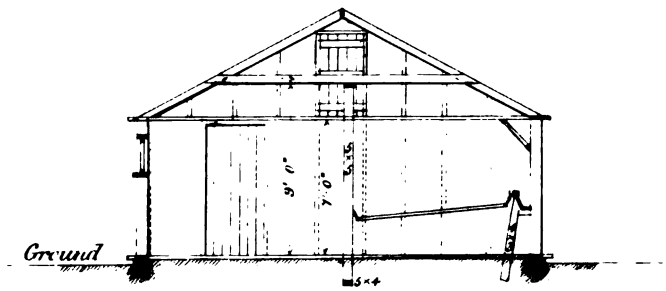
ELEVATION.

S T A B

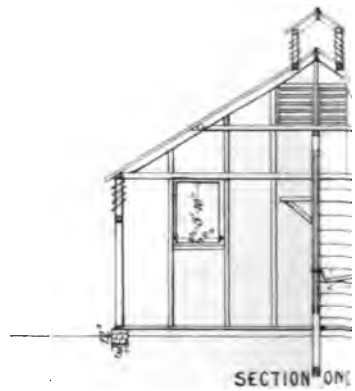
OFFICERS STABLE FO



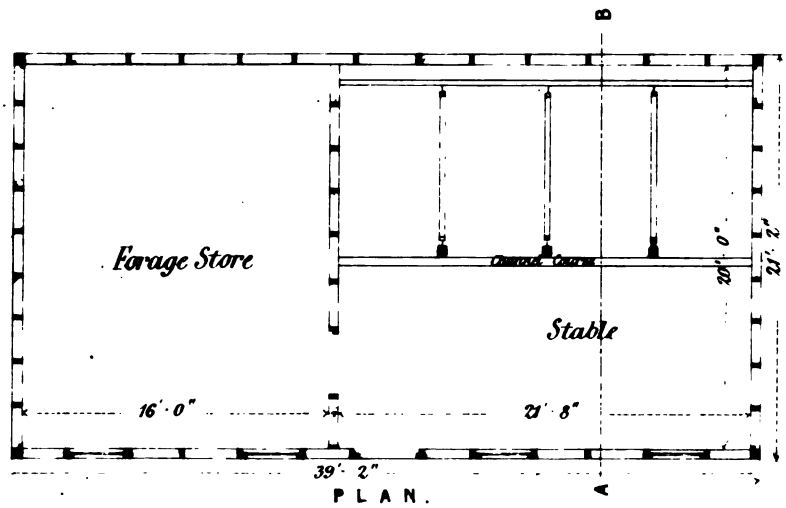
ELEVAT



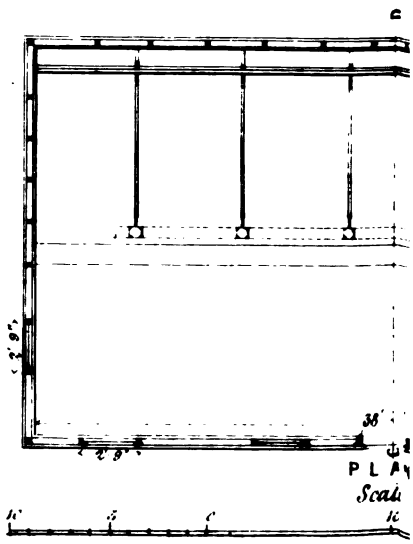
SECTION ON A.B.



SECTION ON



PLAN.

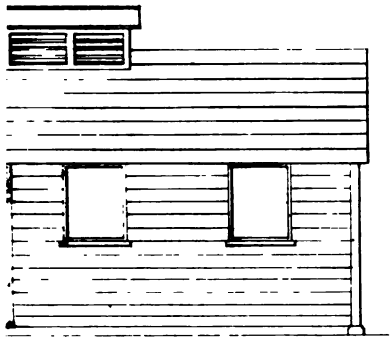


PLA

Scal

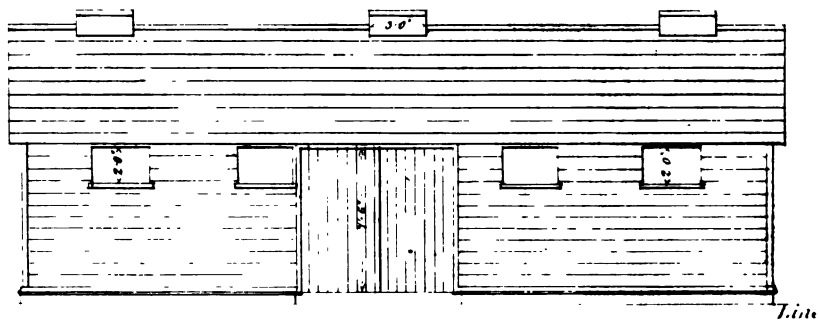
L E S

IR 7 HORSES.

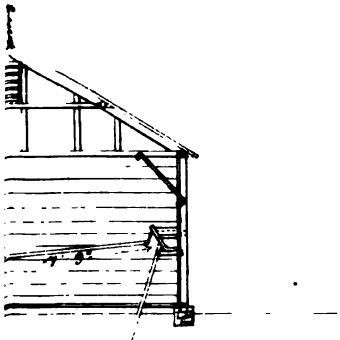


ION.

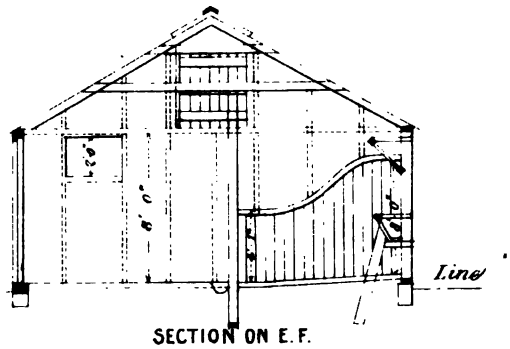
PRINCIPAL MEDICAL OFFICER'S STABLE AND STORE.



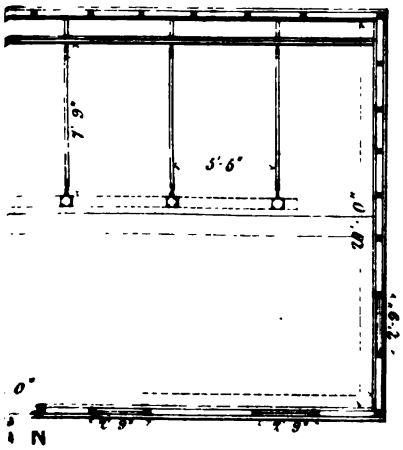
ELEVATION



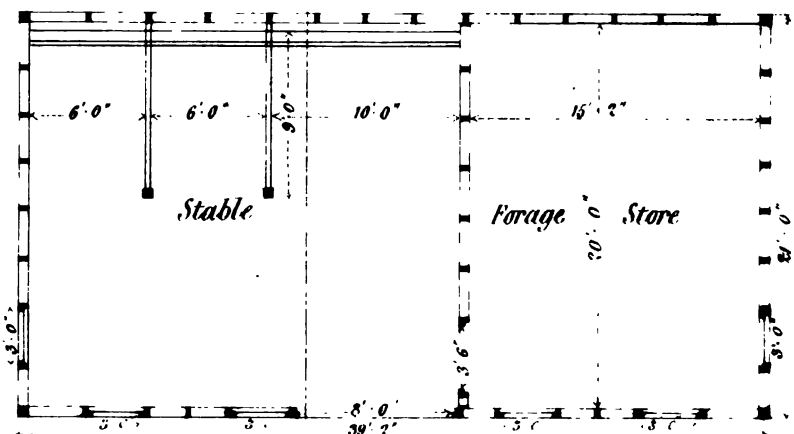
C. D.



SECTION ON E. F.



N



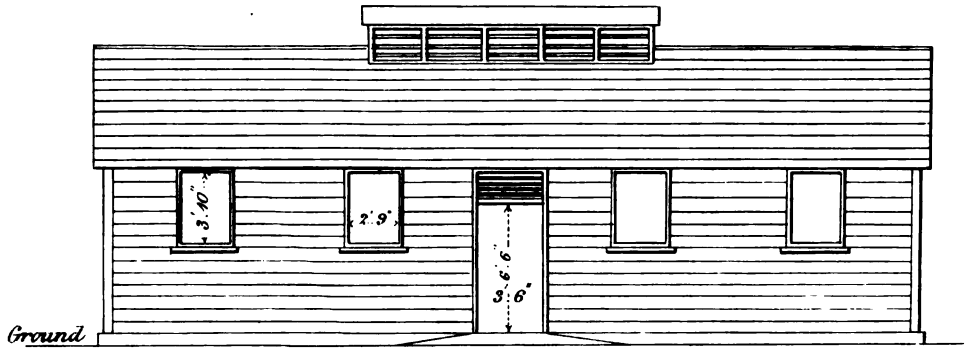
PLAN

E. J. Harrison & Sons N. London

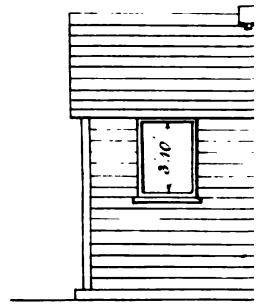
S T A B

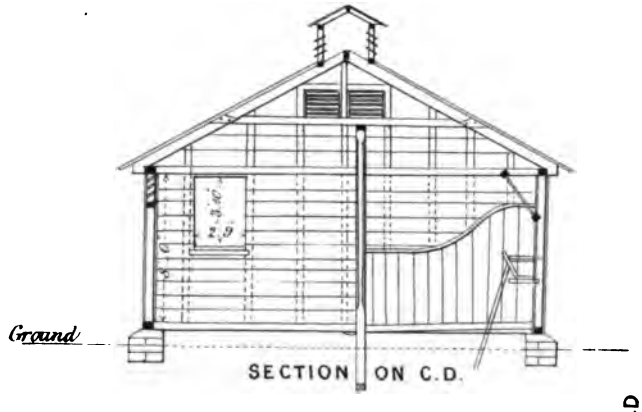
ARTILLERY OFFICERS

HA

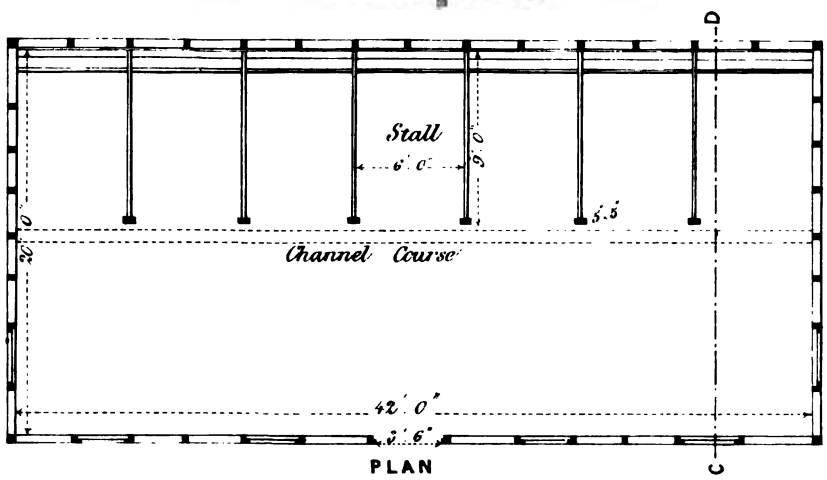


ELEVATION





SECTION ON C.D.



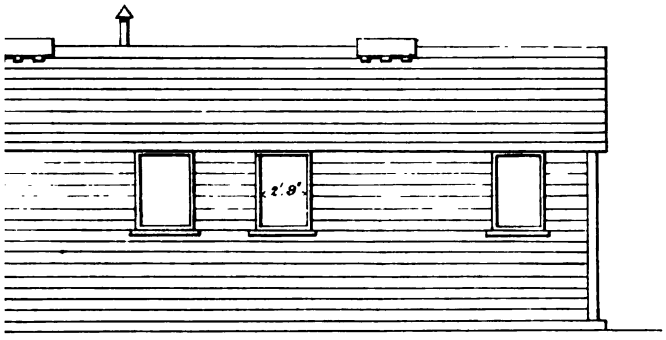
PLAN

Scal

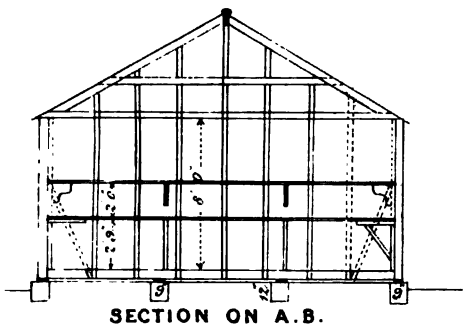
10 5 0

B L E S .

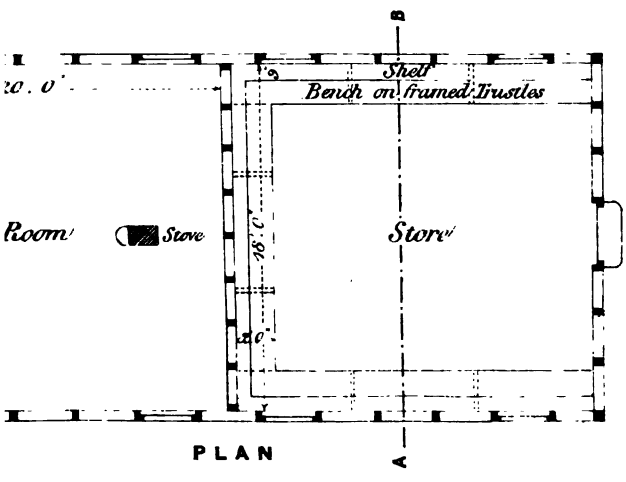
.RNESS ROOM AND STORE.



ELEVATION

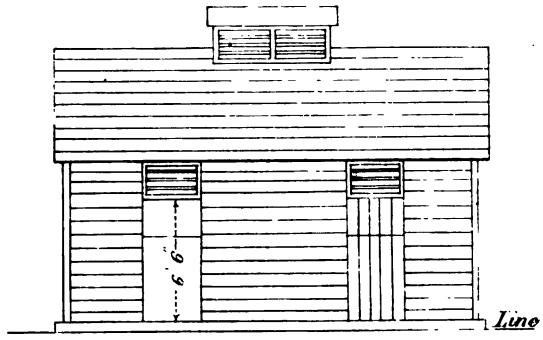


SECTION ON A.B.

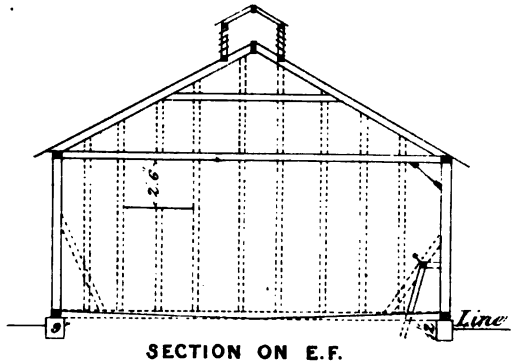


PLAN

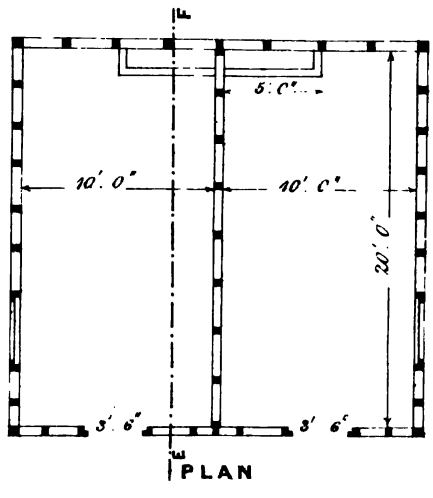
2 HORSE LOOSE BOX



ELEVATION



SECTION ON E.F.

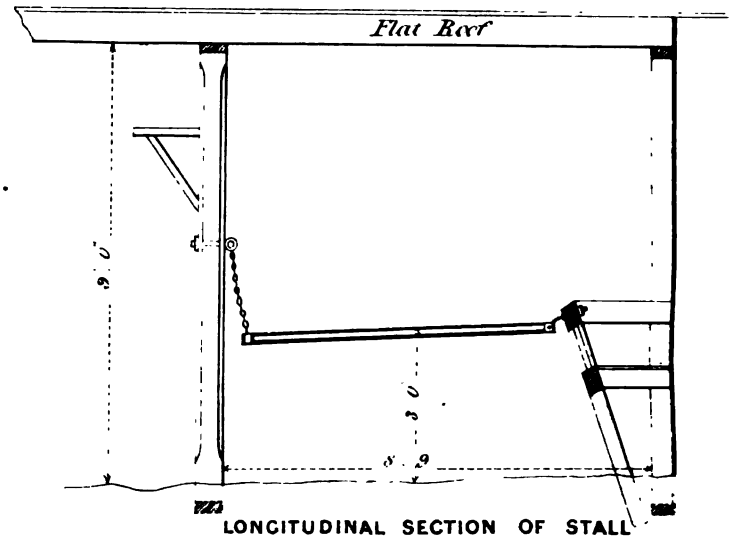


PLAN

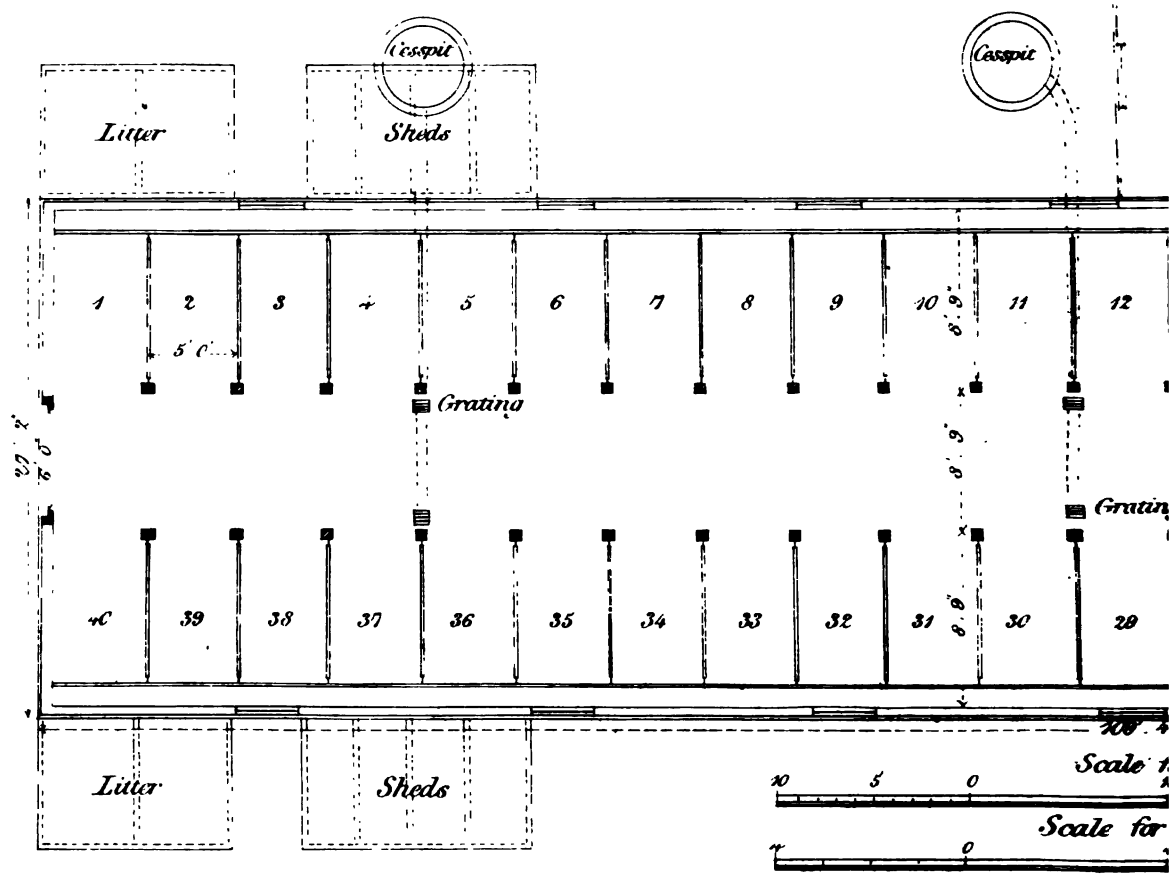
F. J. Harty, Pub. 9 Dame St. Dublin

STA

SUTLERS HUT CONVERTED I

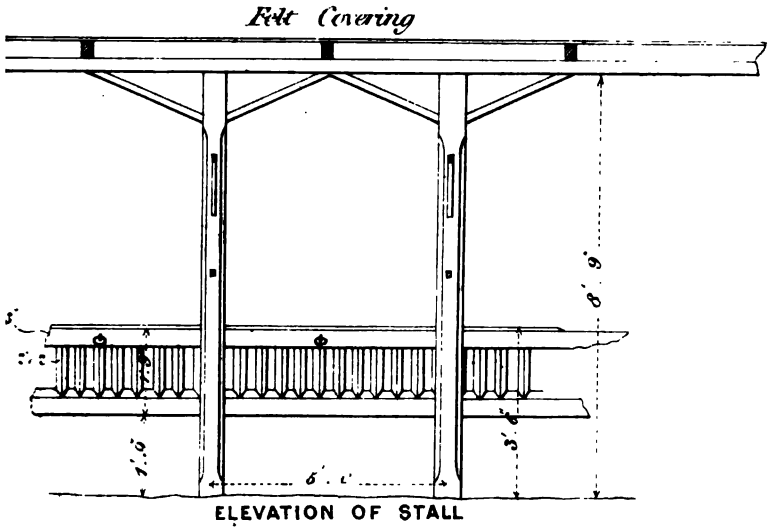


LONGITUDINAL SECTION OF STALL

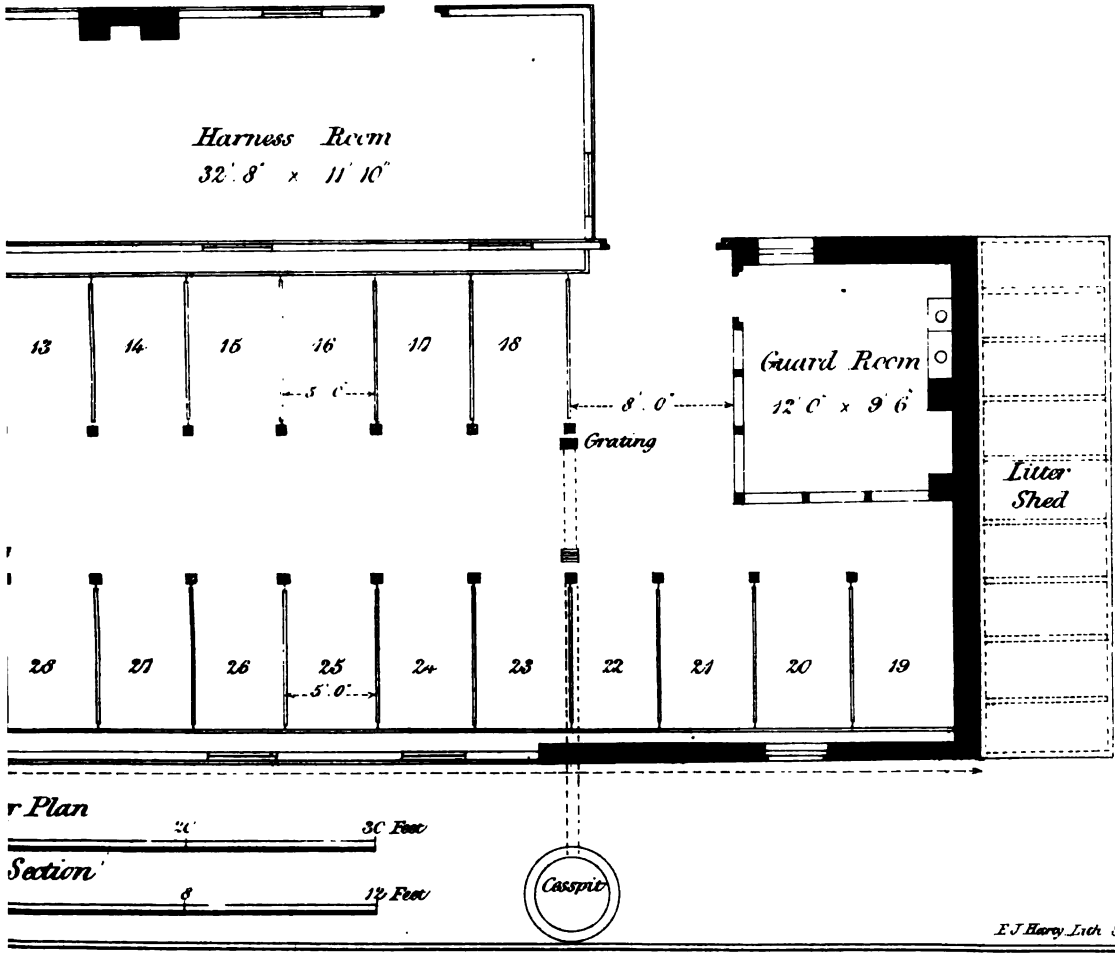


ILES.

NTO STABLE FOR 40 HORSES



ELEVATION OF STALL



r Plan

30' 30 Feet

Section

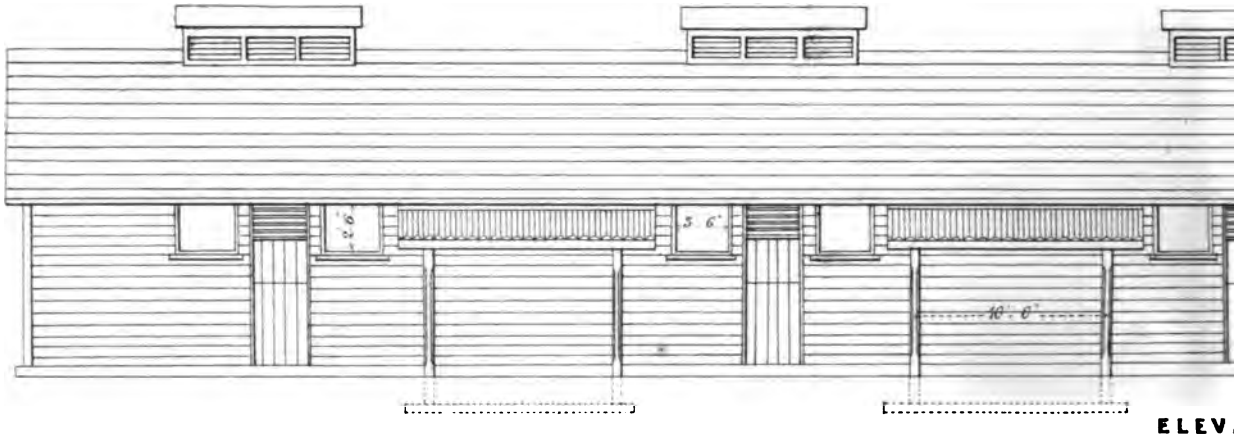
8 12 Feet

Cesspit

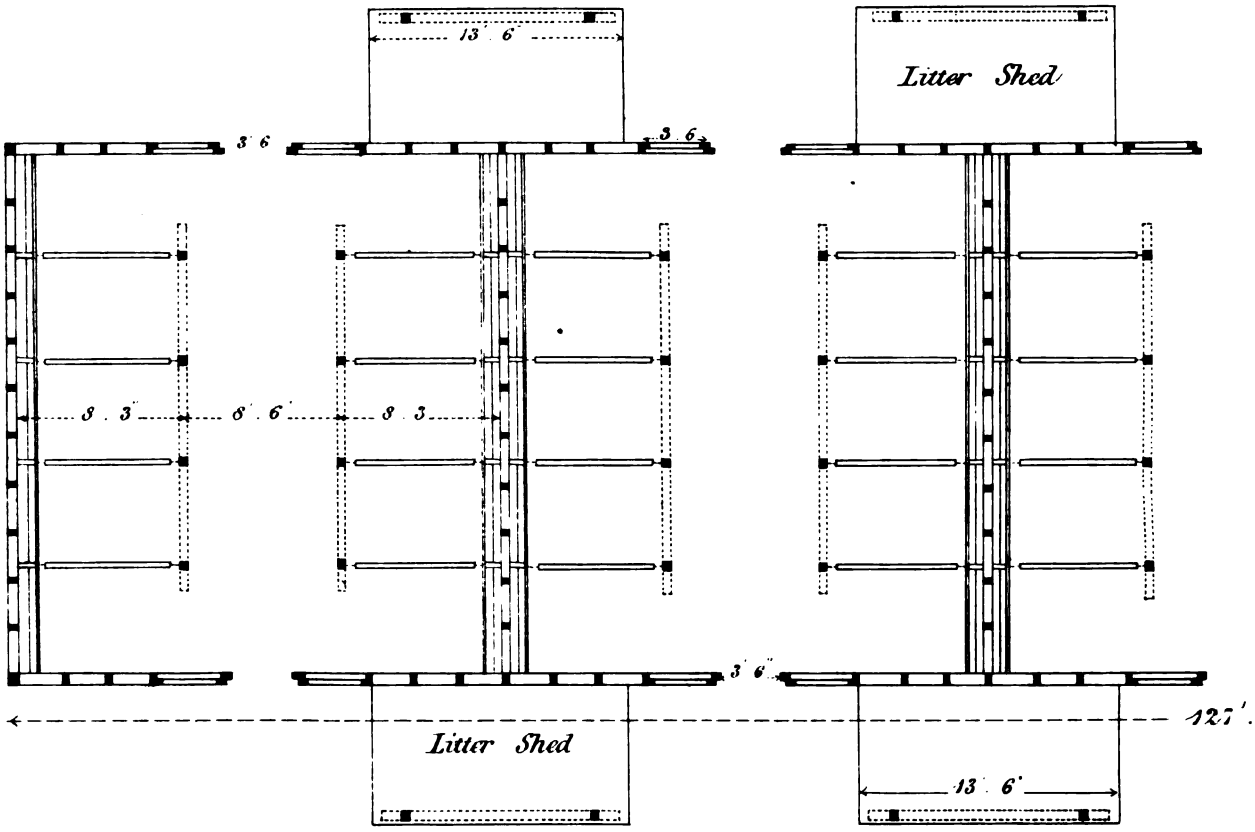
E.J. Harvey Lith. 9 Dame St Dublin

S T A

ARTILLERY STABL



ELEV



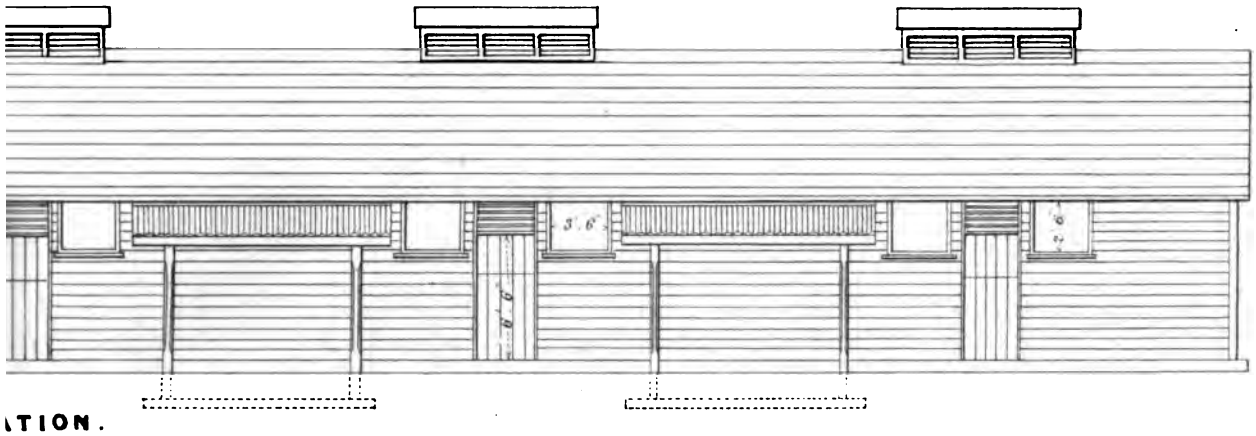
PLA

Scal

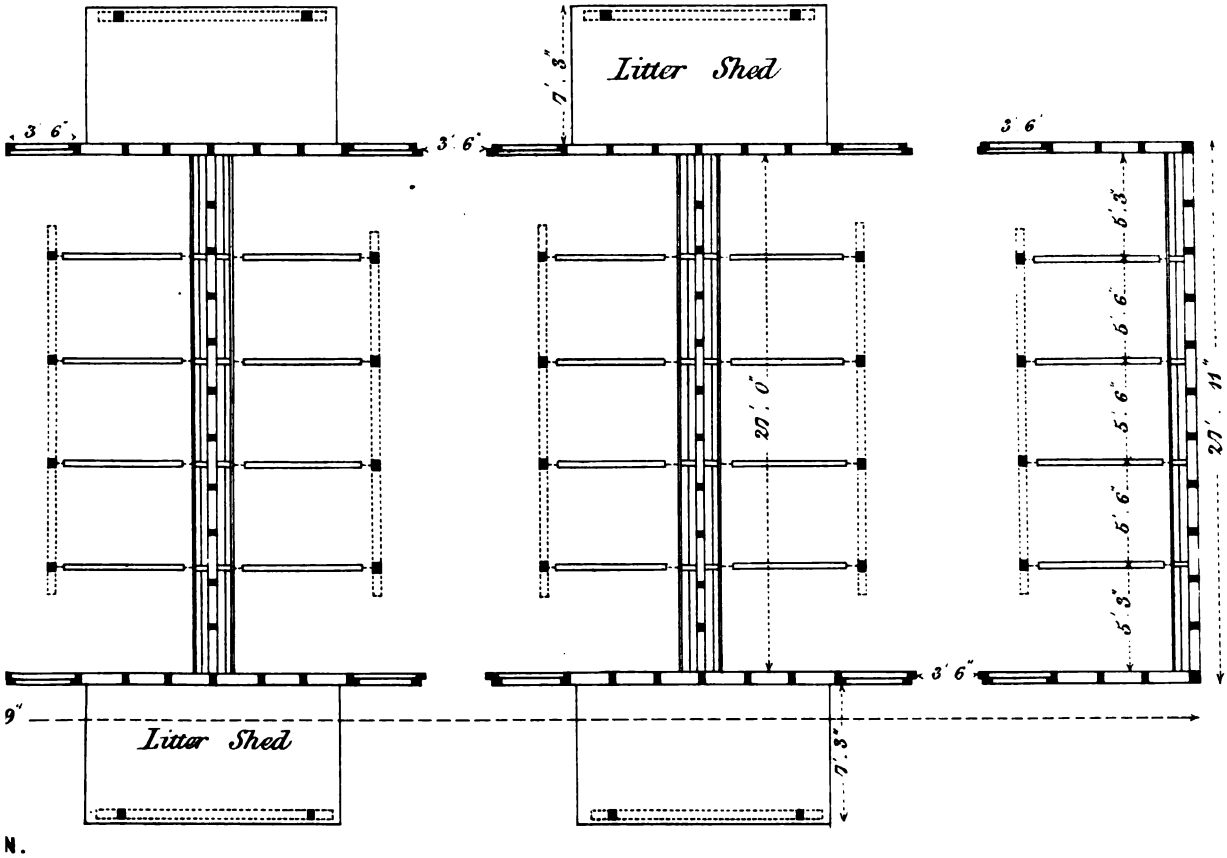
10 5 0

B L E S.

E FOR 50 HORSES.



ATION.



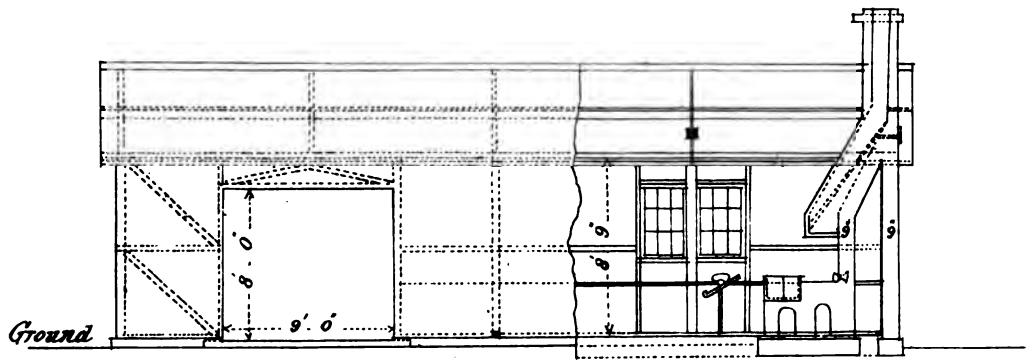
N.

20 30 Feet

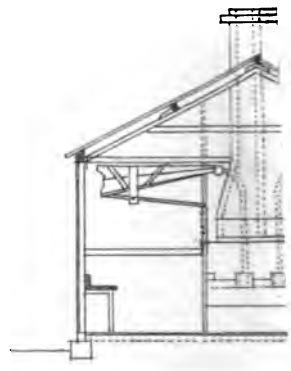
E.J Hasty, Lith. 9 Dame St. Dublin

STAI

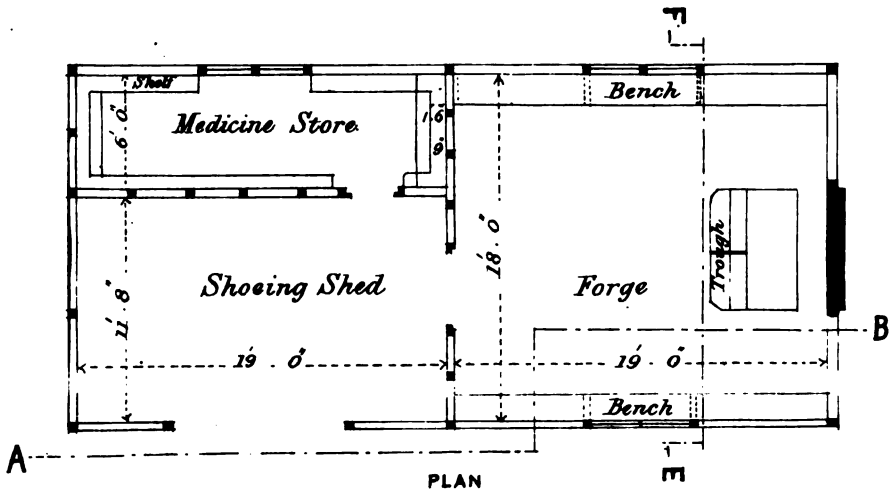
FORGE AND INFI

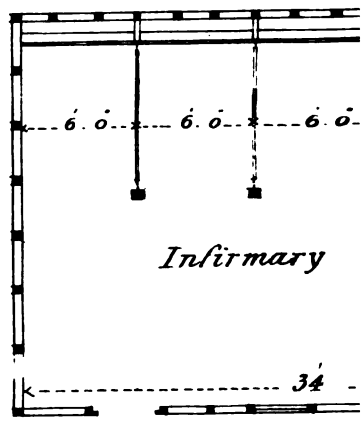


PART ELEVATION AND SECTION ON A. B.

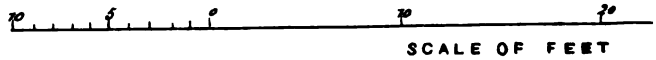


SECTION





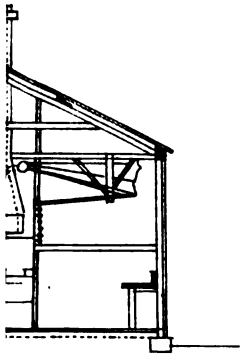
F



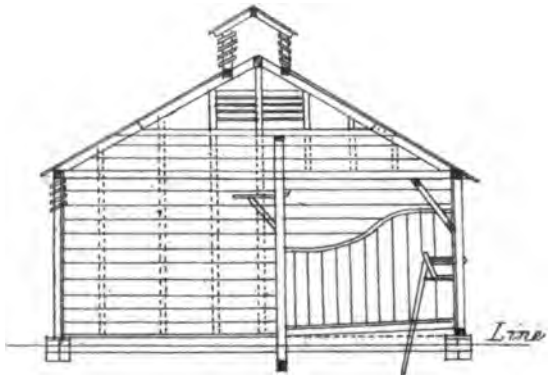
SCALE OF FEET

B L E S

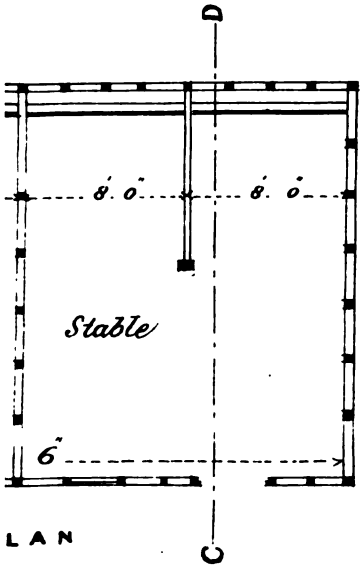
RMARY STABLE.



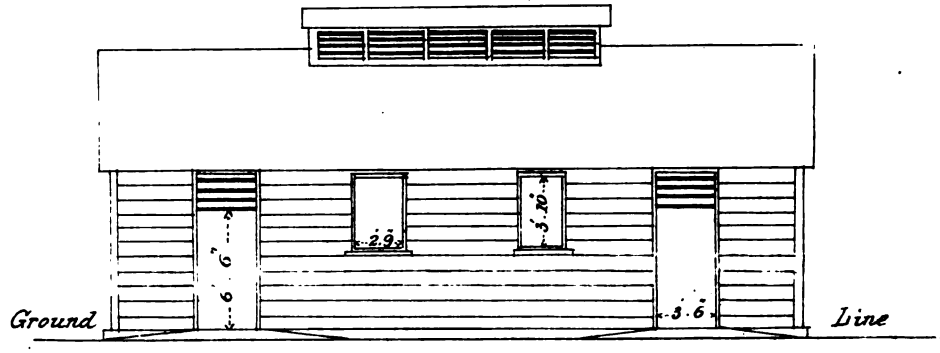
E.F.



SECTION C. D.



LAN

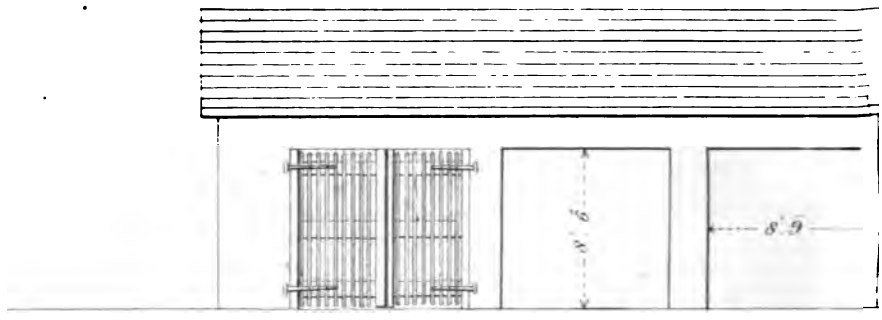


ELEVATION

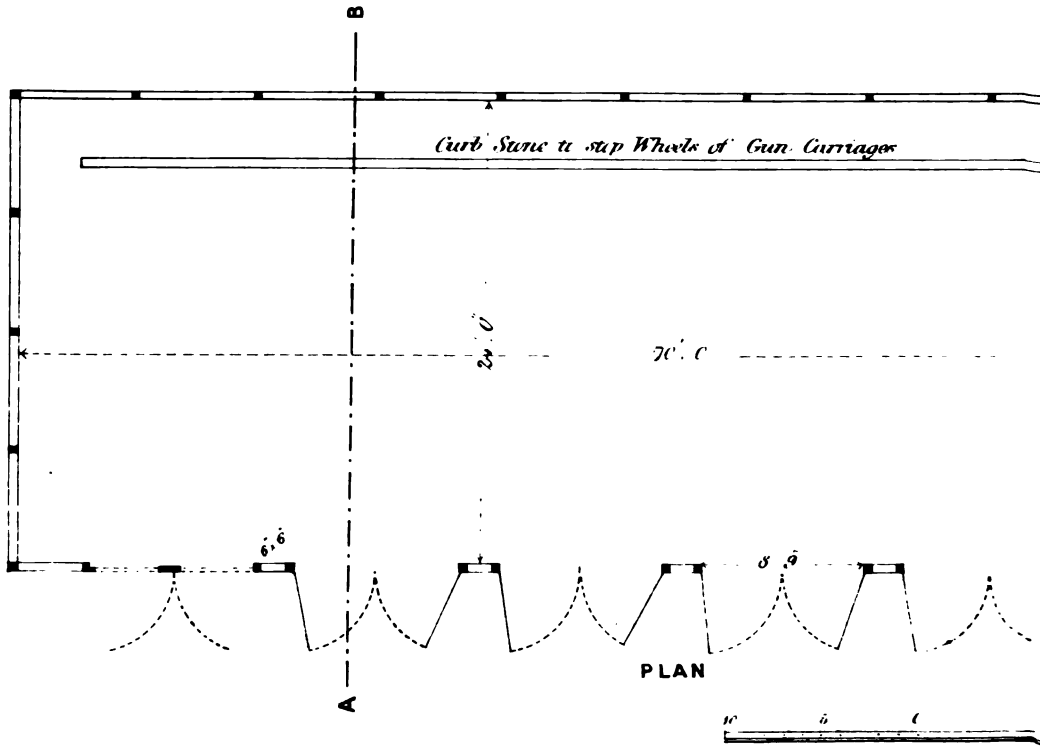
30 40 Feet

WALLER & CO. LITH.

GUN SH

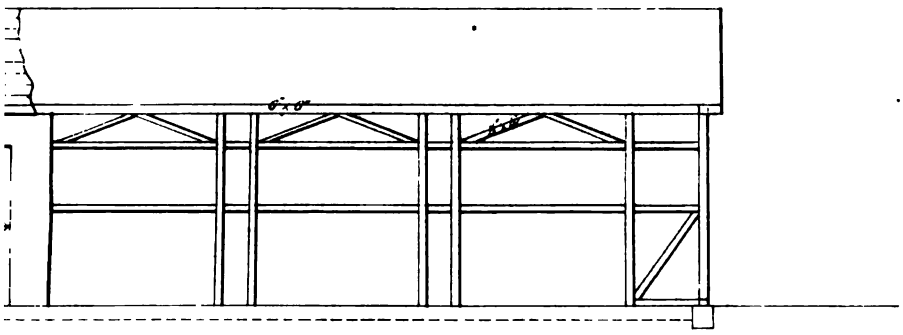


PART ELEVATIO

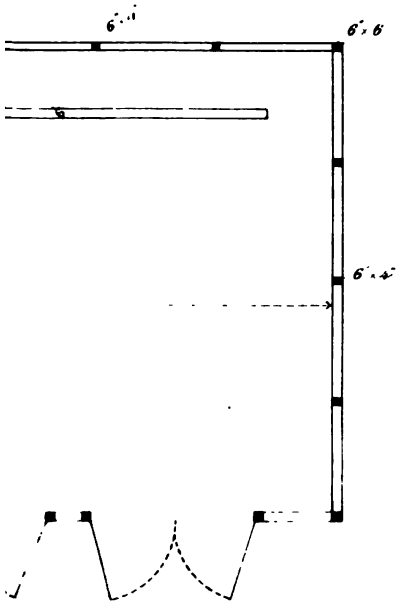


PLAN

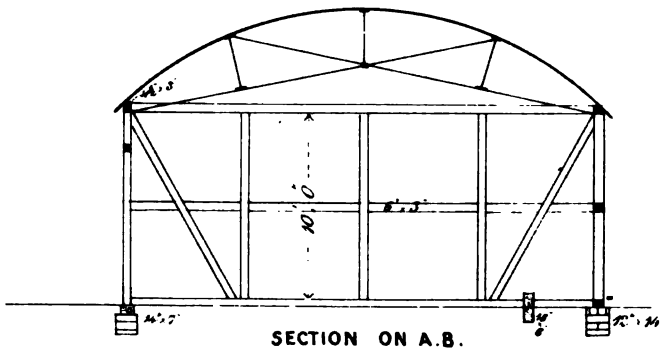
HEDS



N AND SECTION



Scale:
0 20 30 Feet



SECTION ON A.B.

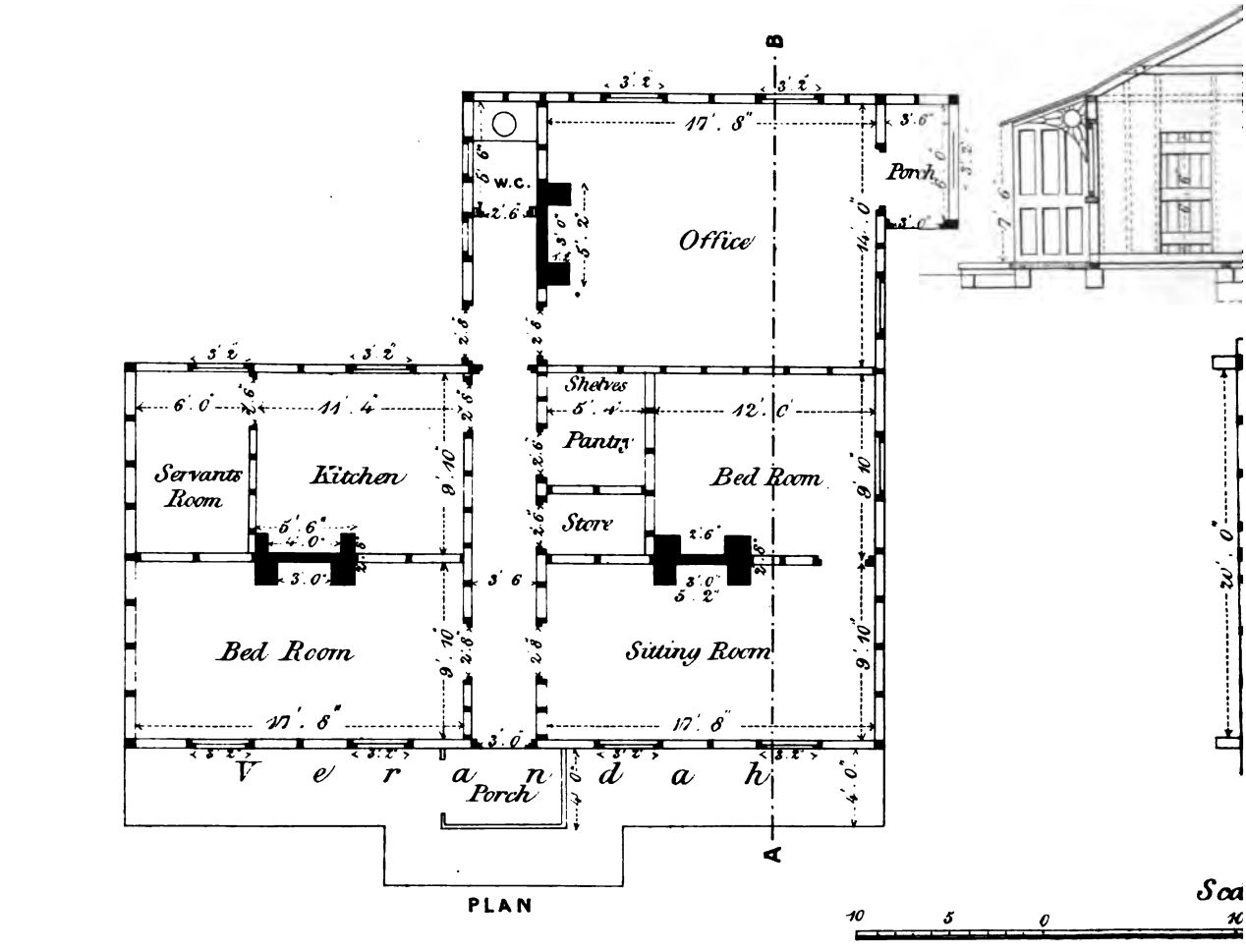
NOTE. The Waggon & Cart Sheds are of much similar construction but have no doors.

Ed. Hargy, Lith. 9, Dame St, Dublin

HOSP

PRINCIPAL MEDICAL OFFICERS HUT

ELEVATION

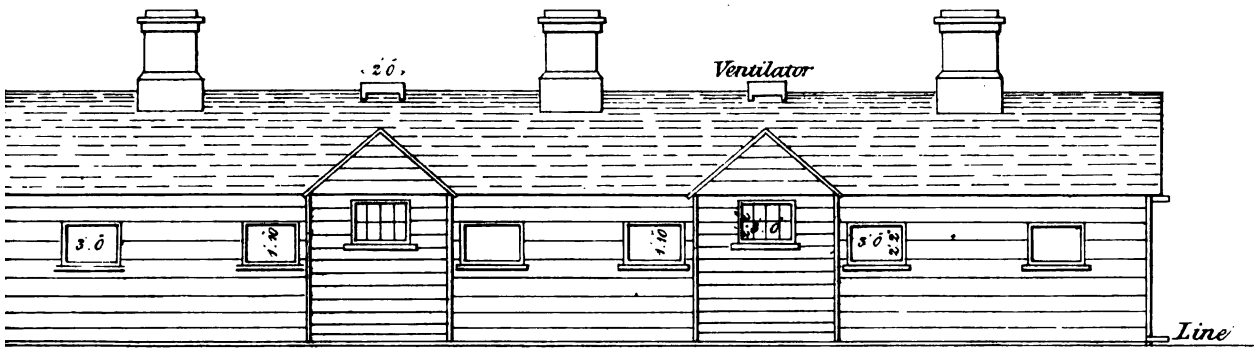


PLAN

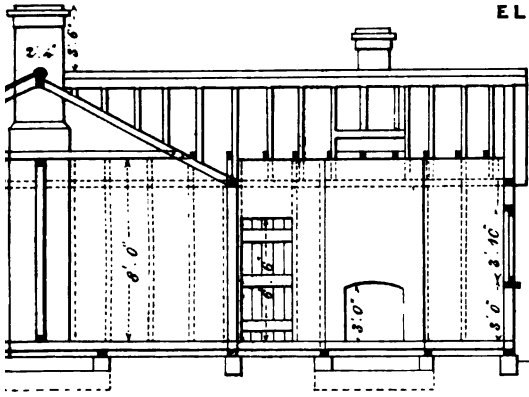
Scale
10 5 0

I TALS

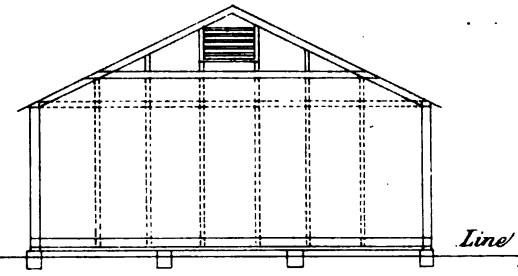
MEDICAL OFFICERS QUARTERS



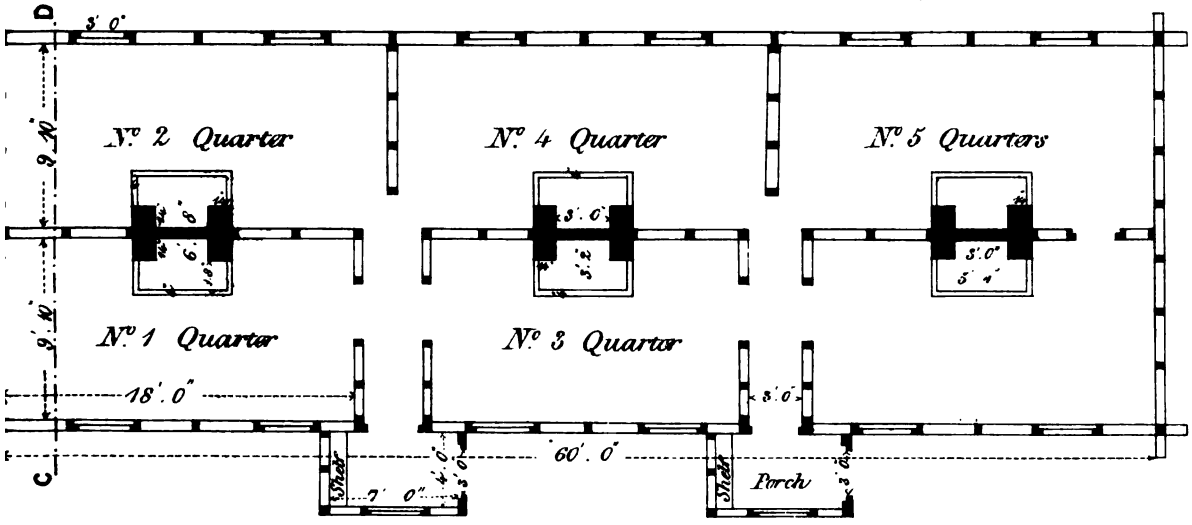
ELEVATION



SECTION ON A.B.



SECTION ON C.D.



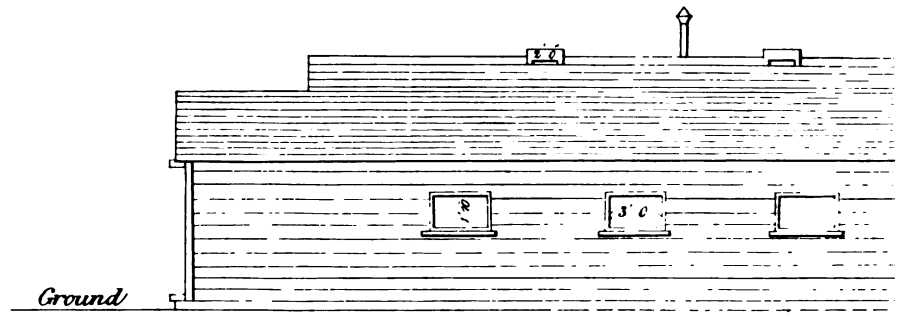
PLAN

20 30 Feet

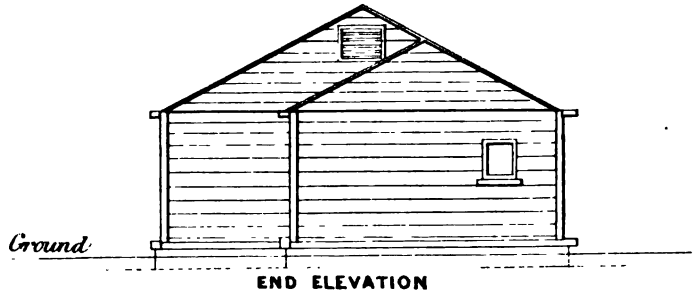
E.J. Harty, Lith: 9, Dame St Dublin

HOSP

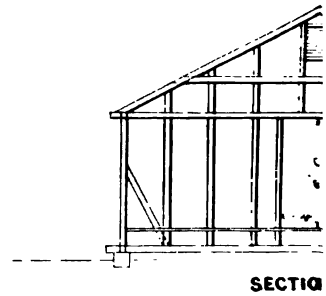
HUT FOR 2



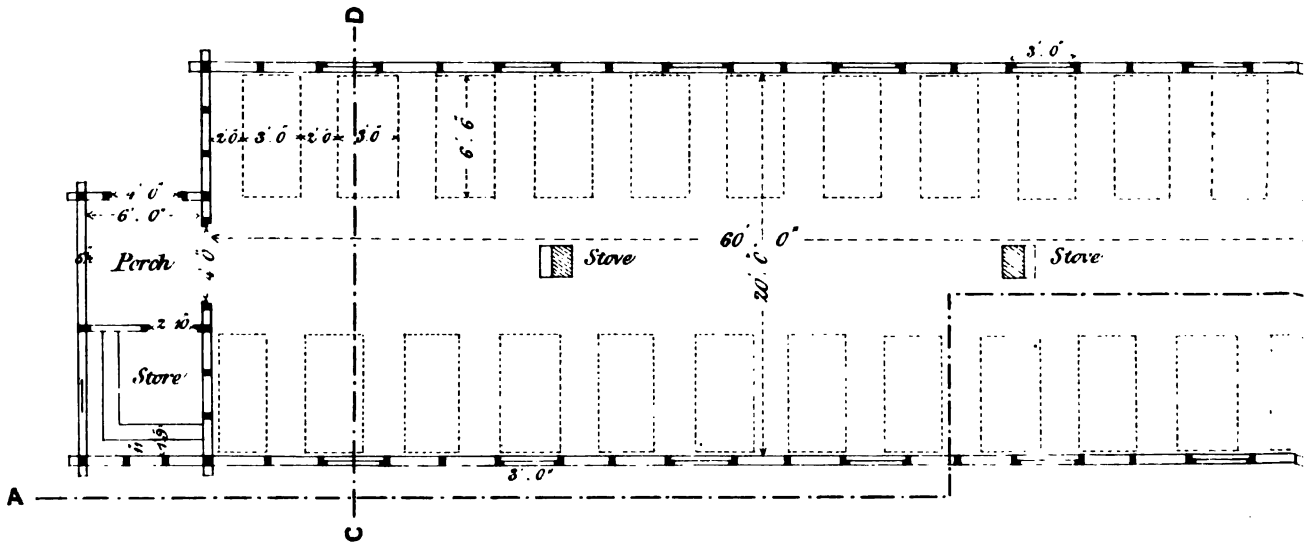
ELEVATION AND SECT



END ELEVATION



SECTIO

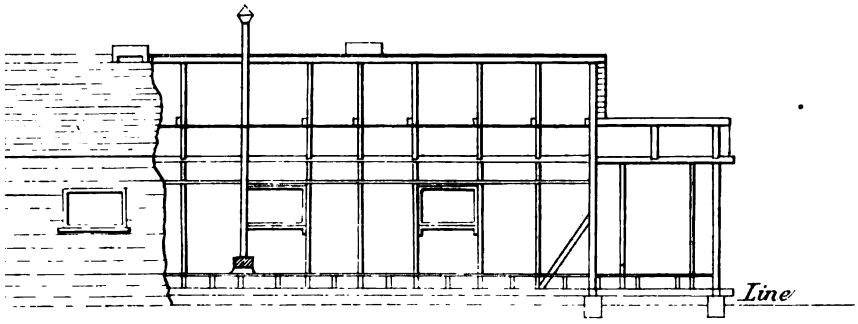


Sca

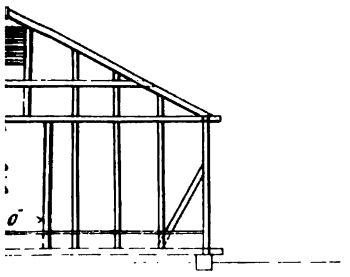
10 6 0 10

I TALS

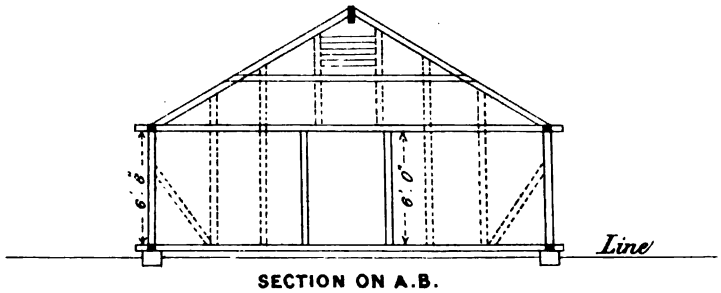
4 PATIENTS



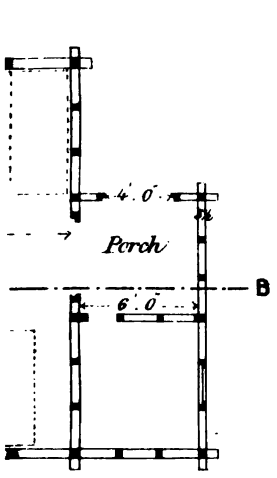
ION ON LINE A.B.

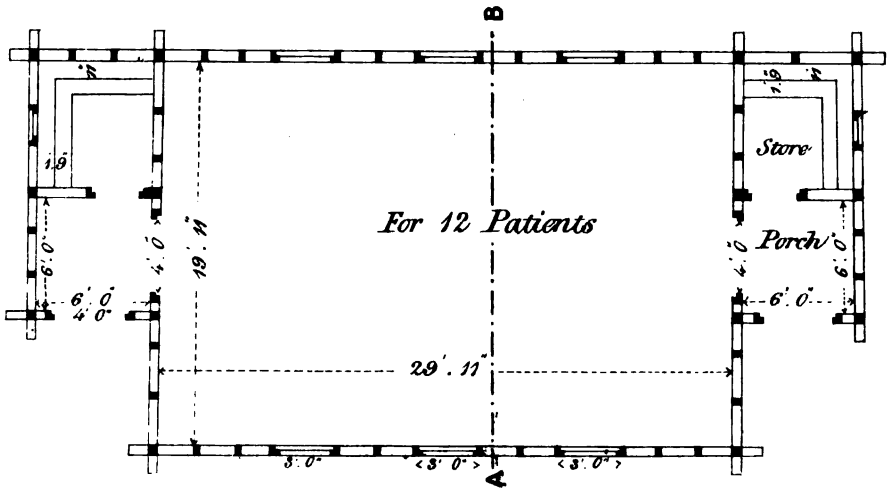


N ON C.D.



SECTION ON A.B.





PLAN OF SMALL HOSPITAL HUT

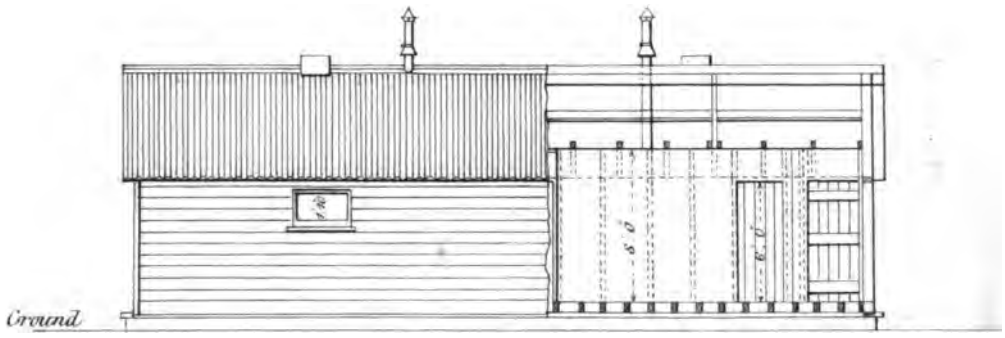
le.

20 30 Feet

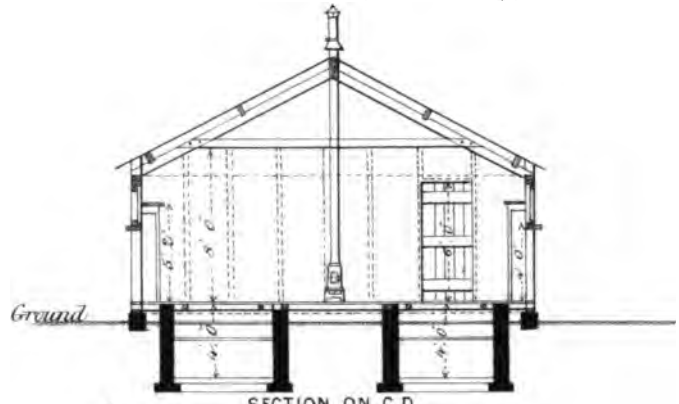
E.J. Harg, Lith. 9, Dame St Dublin

HOSPIT

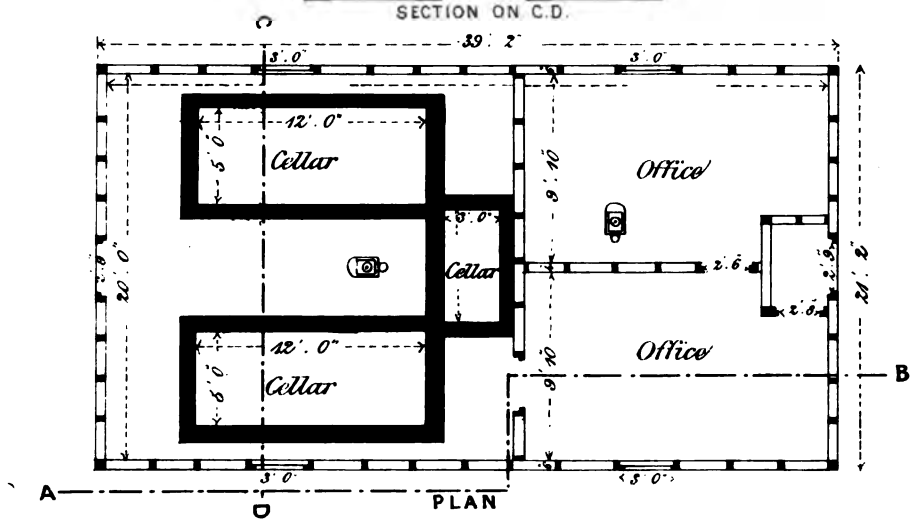
PURVEYORS STORE

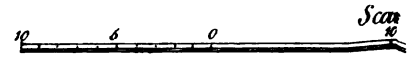


ELEVATION AND SECTION ON A.B.



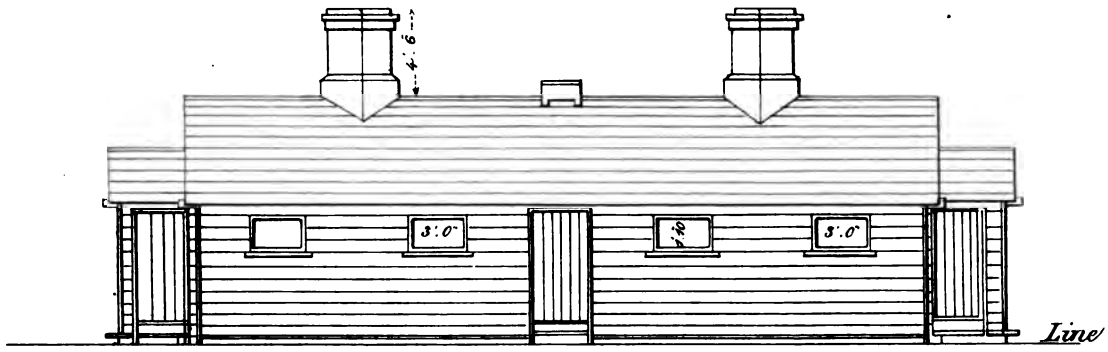
SECTION ON C.D.

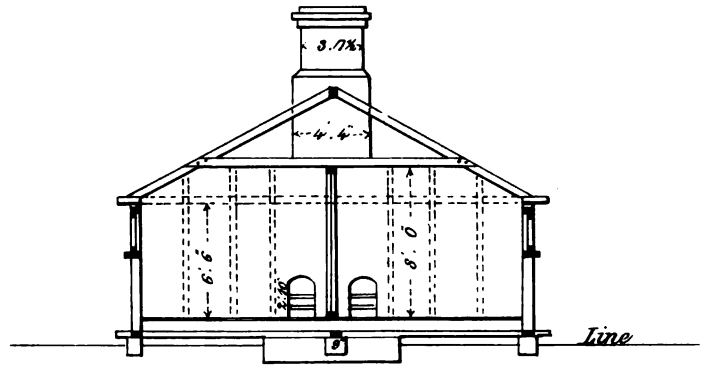




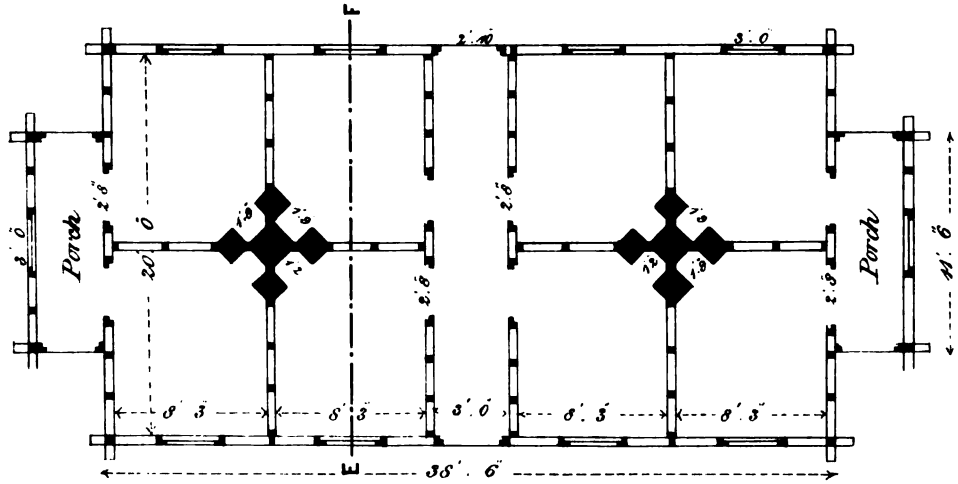
ALS

HUT FOR ORDERLIES





SECTION ON E.F.



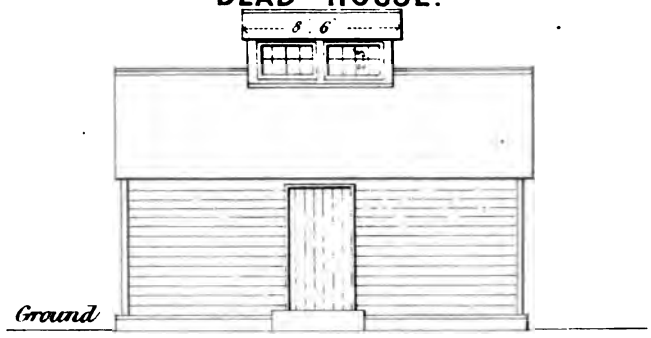
PLAN

0 20 30 Feet

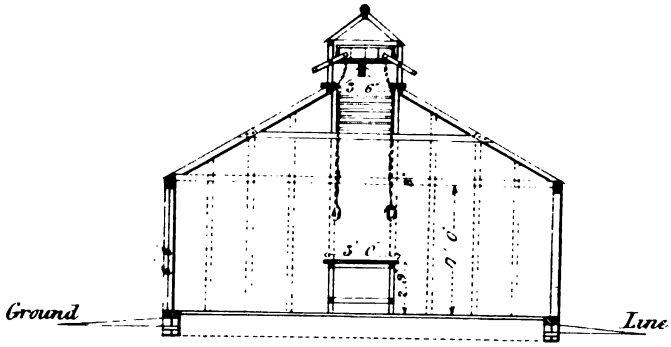
E. J. Hary, Lith. 9, Dame St. Dublin.

HOSPI

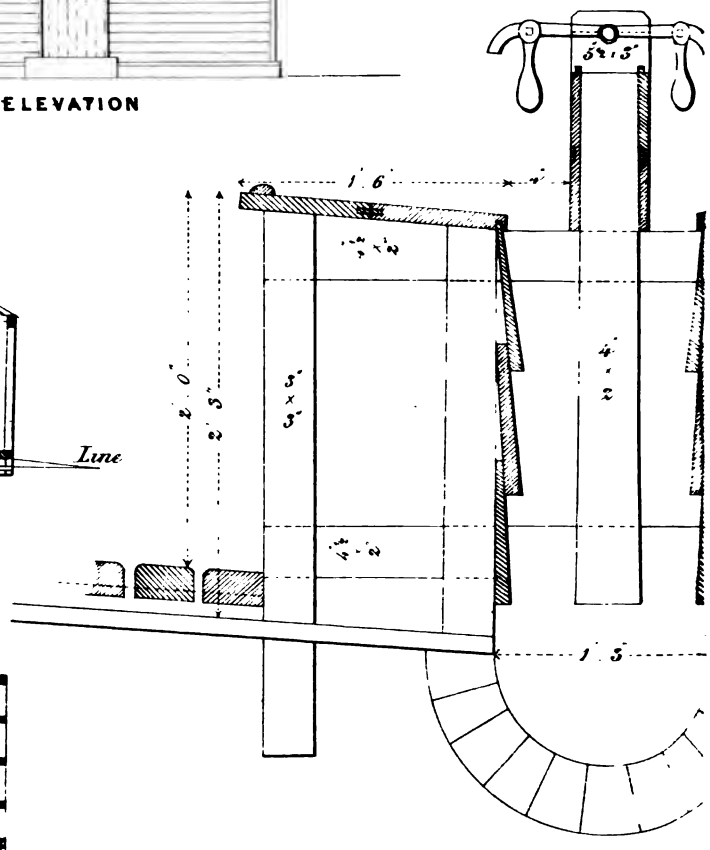
DEAD HOUSE.



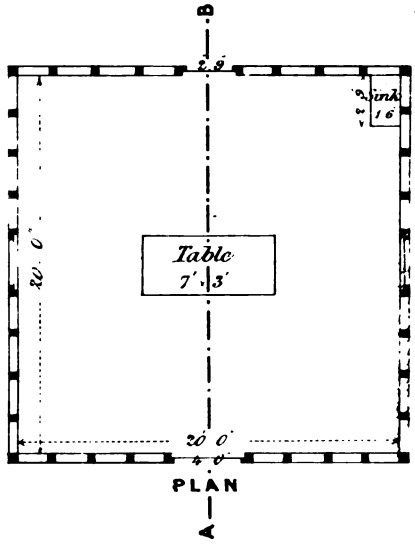
ELEVATION



SECTION ON A.B.

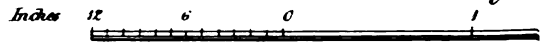


SECTION ON E.F.

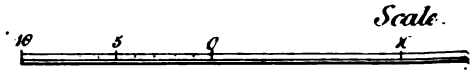


PLAN

Scale for Enlarged

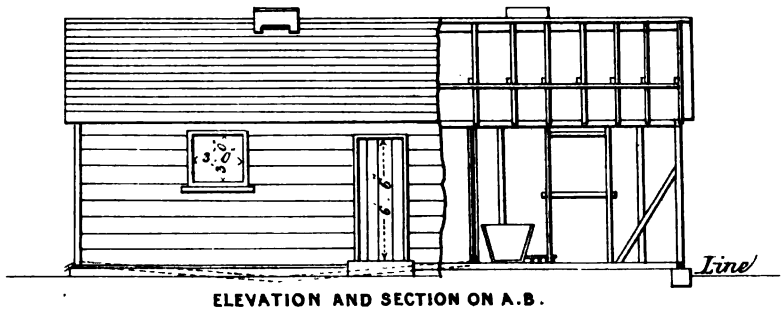


Scale.

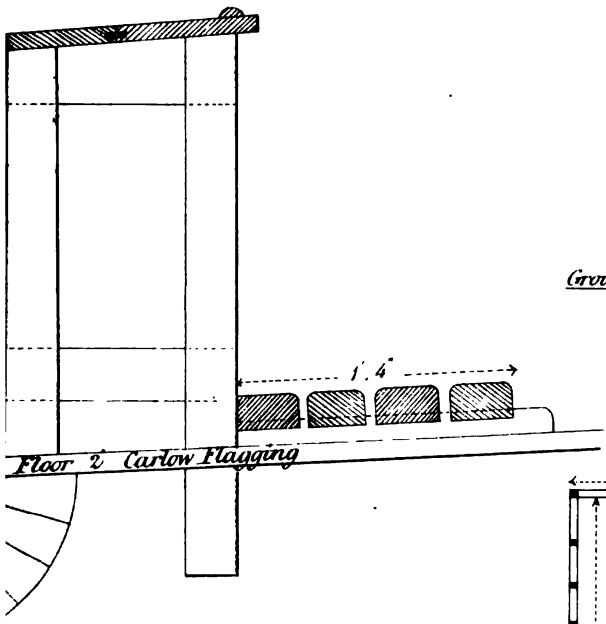


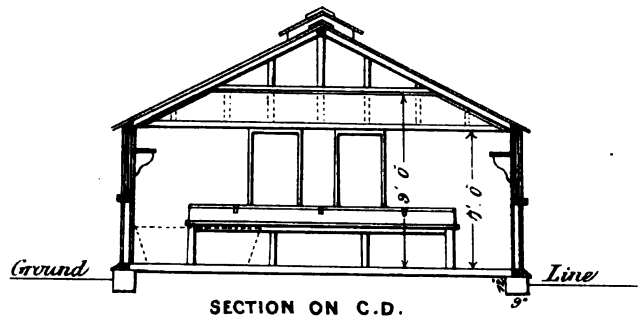
TALS

HUT FOR ABLUTION PURPOSES.

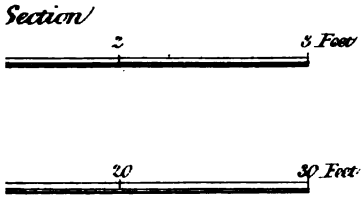


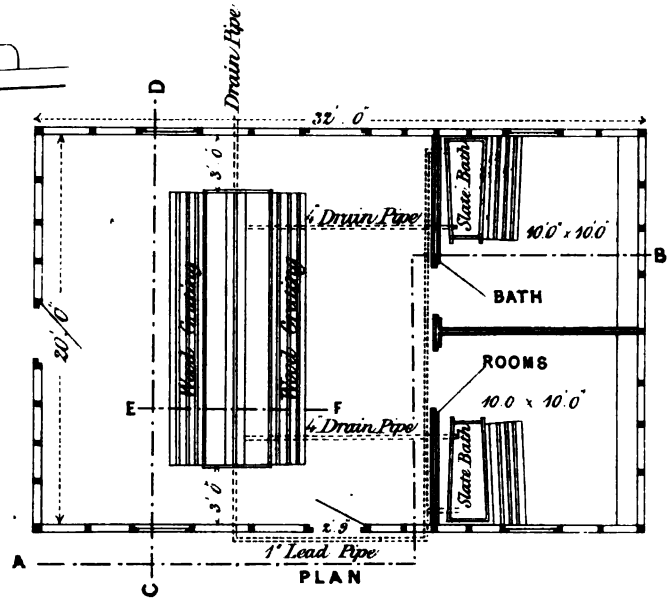
ELEVATION AND SECTION ON A.B.



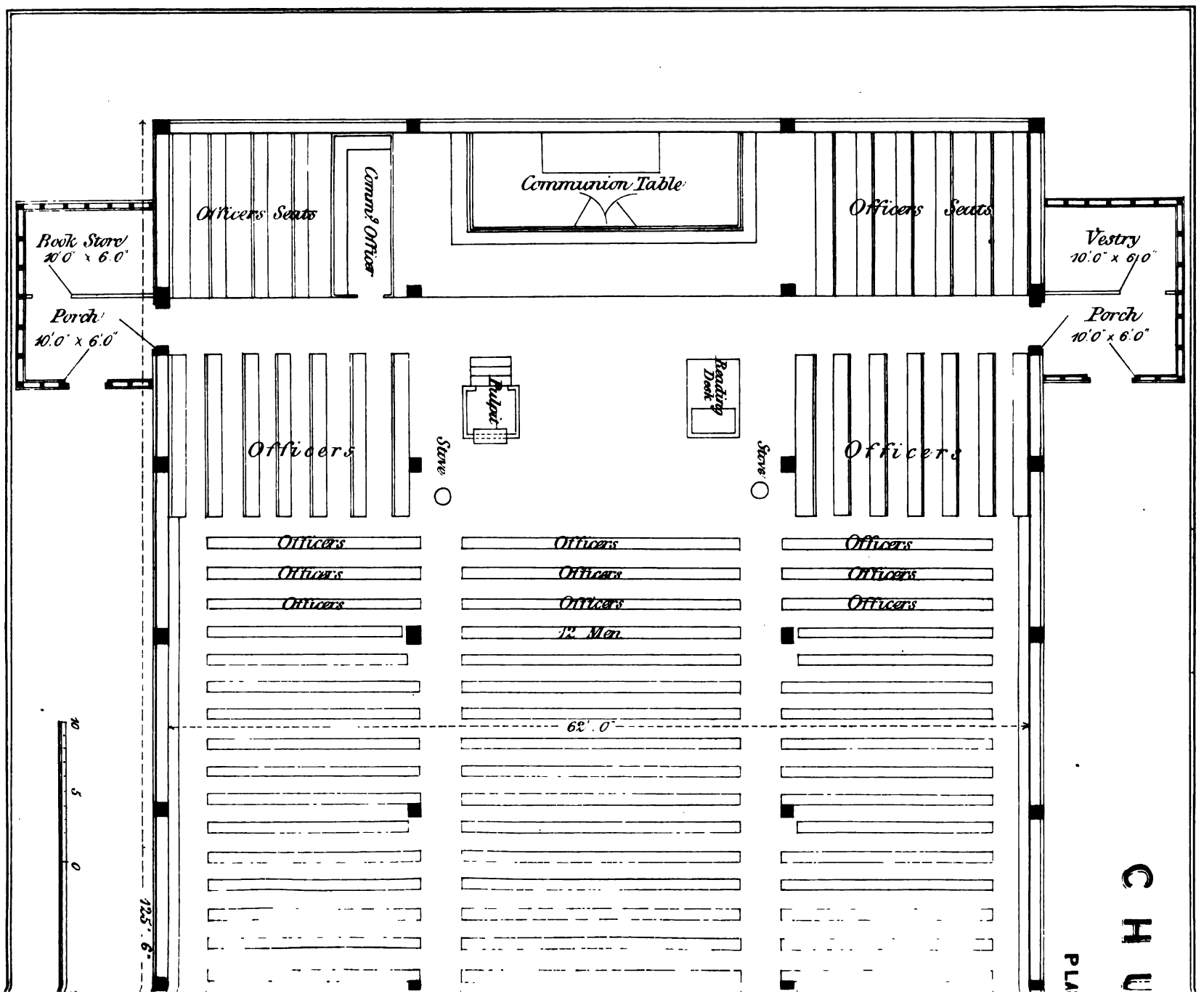


SECTION ON C.D.



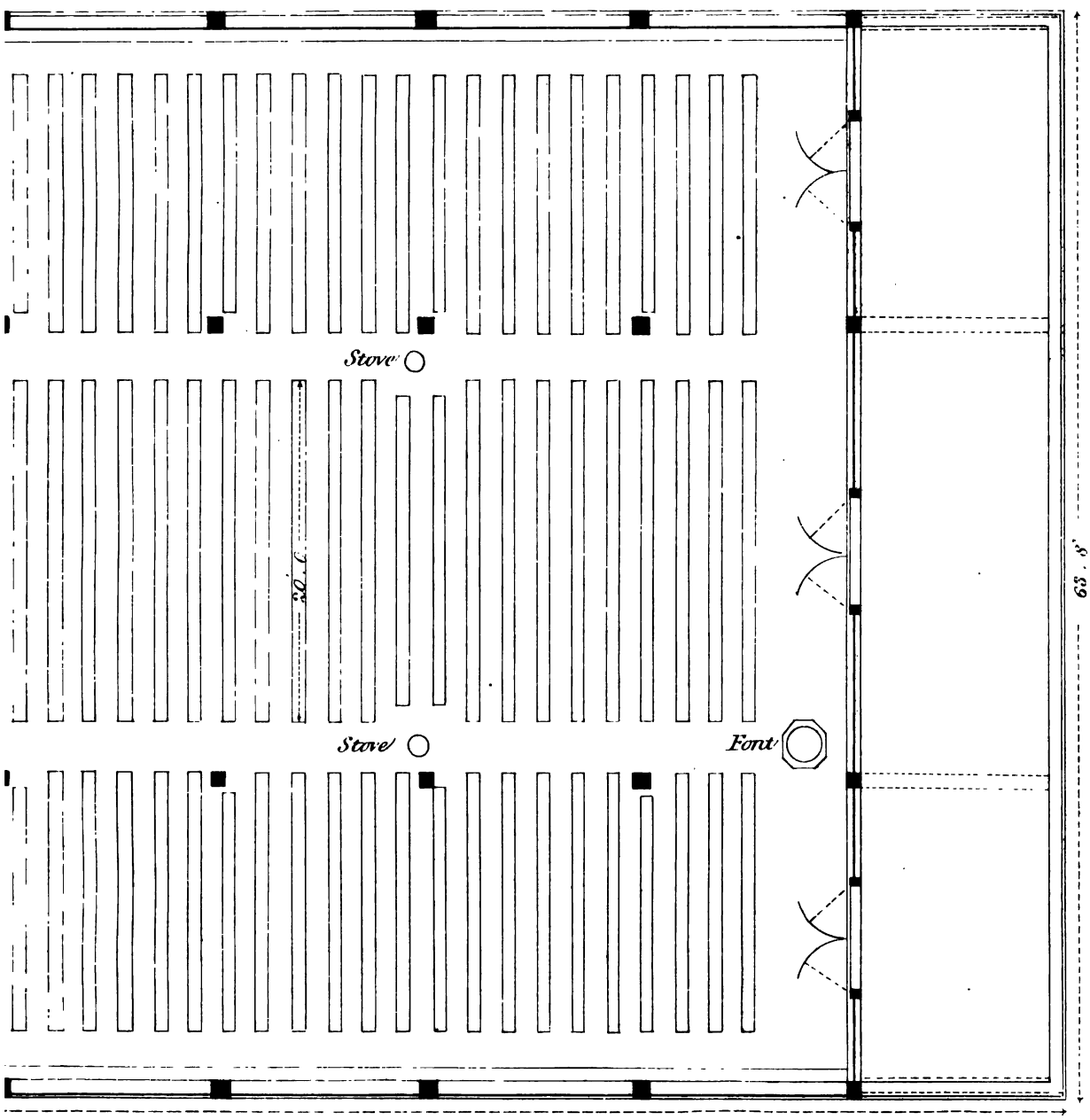


E. J. Harty, Lith, 9, Dame St. Dublin


Officers Seats
Comm.s Office
Communion Table
Officers Seats
Book Store
10'.0" x 6'.0"
Vestry
10'.0" x 6'.0"
Porch
10'.0" x 6'.0"
Porch
10'.0" x 6'.0"
Pulpit
Reading Desk
Stove
Stove
Officers
Officers
Officers
Officers
Officers
Officers
Officers
Officers
Officers
Officers
Officers
Officers
12 Men
62'. 0"
125'. 6"
10
5
0
CHU
PLA

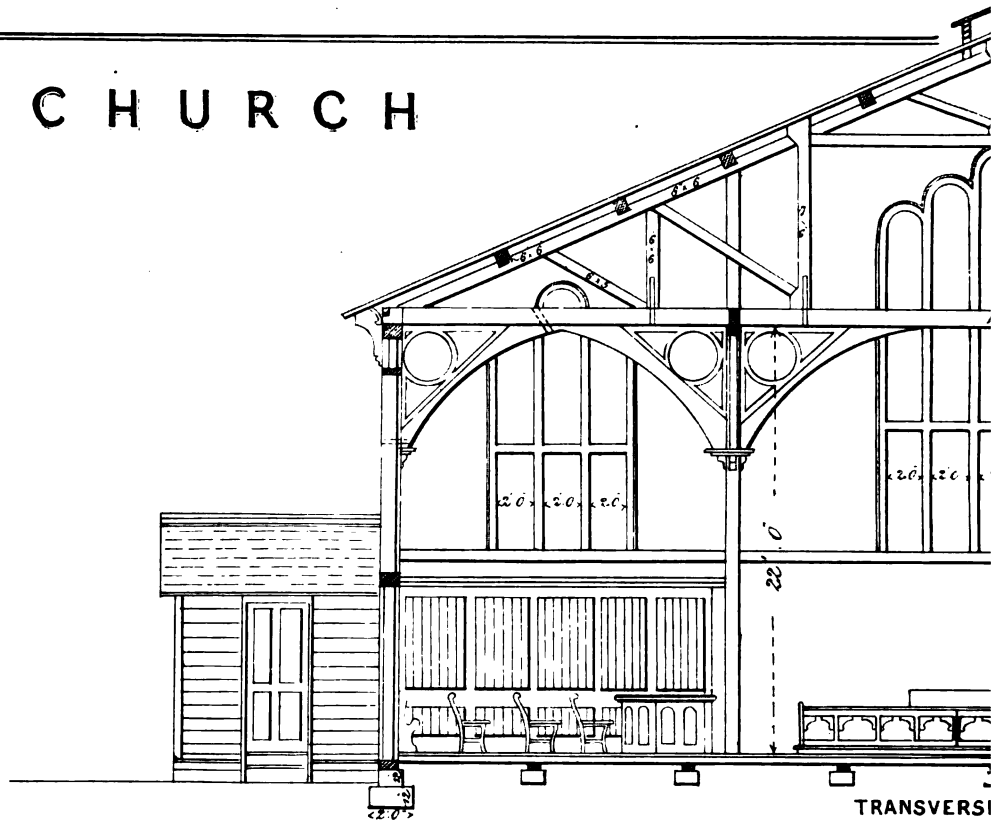
I R C H

N

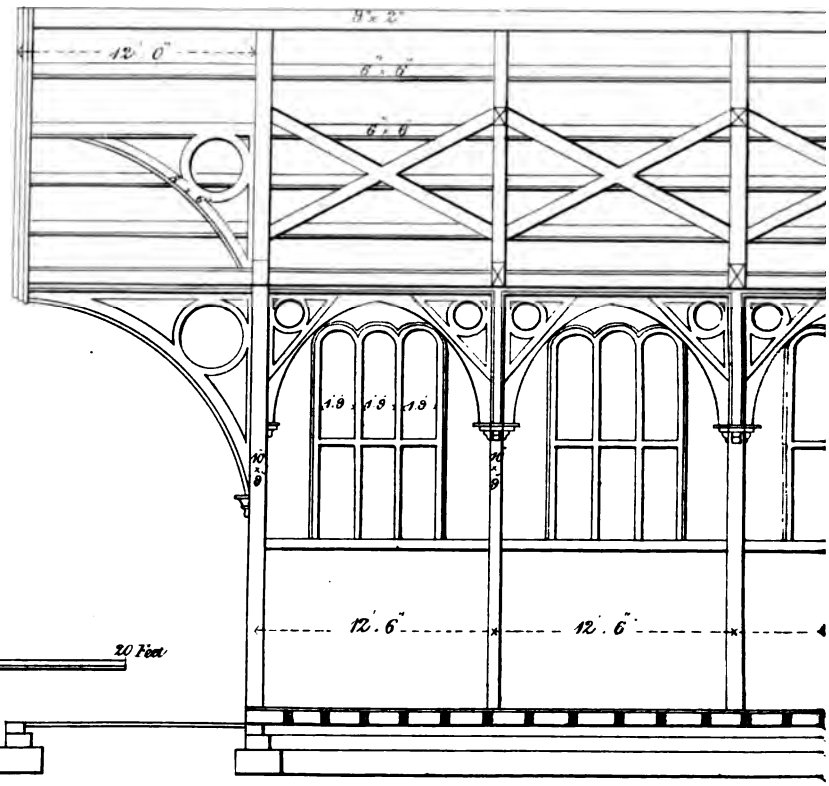


E J Hardy Lith 9 Dame St Dublin

CHURCH



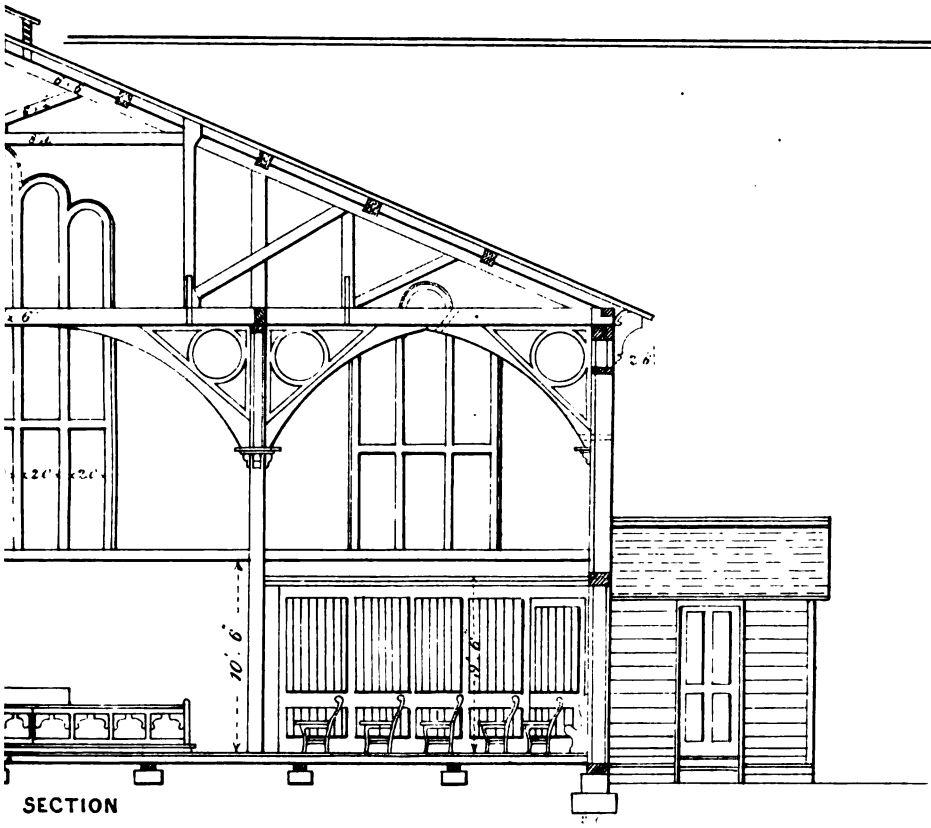
TRANSVERSE



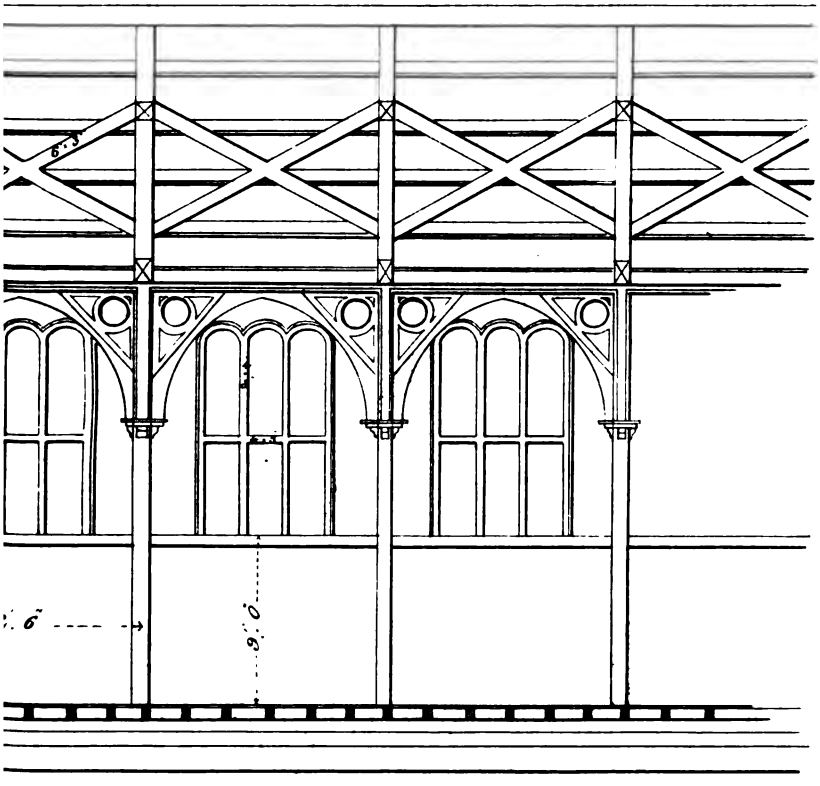
LONGITUDINAL

Scale

10 5 0 10 20 Feet



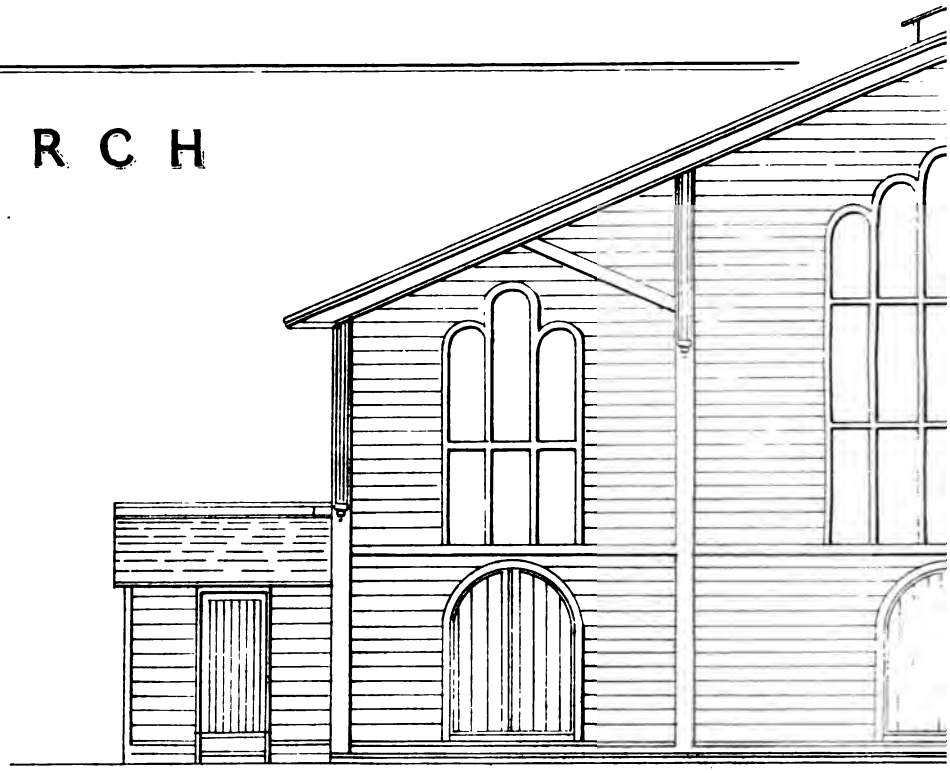
SECTION



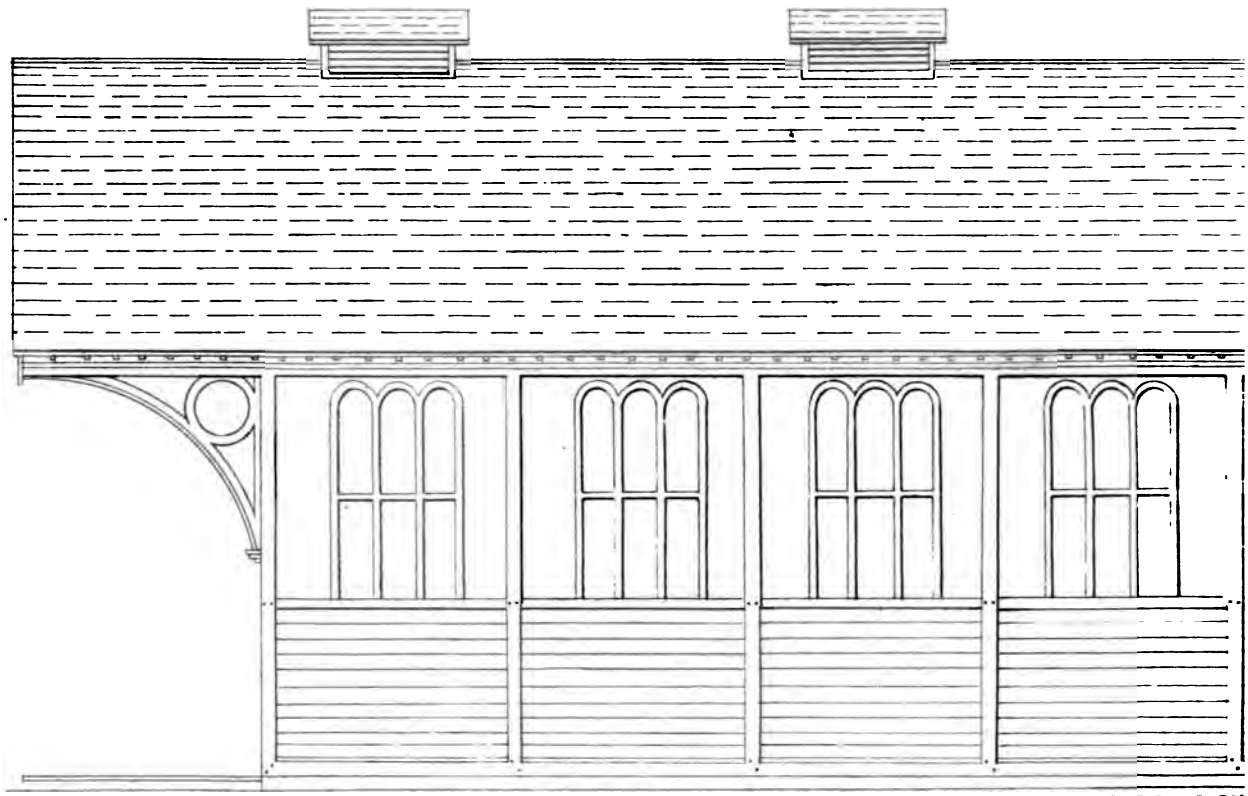
SECTION

E. J. Harty, Lith. 9 Dame St. Dublin.

CHURCH



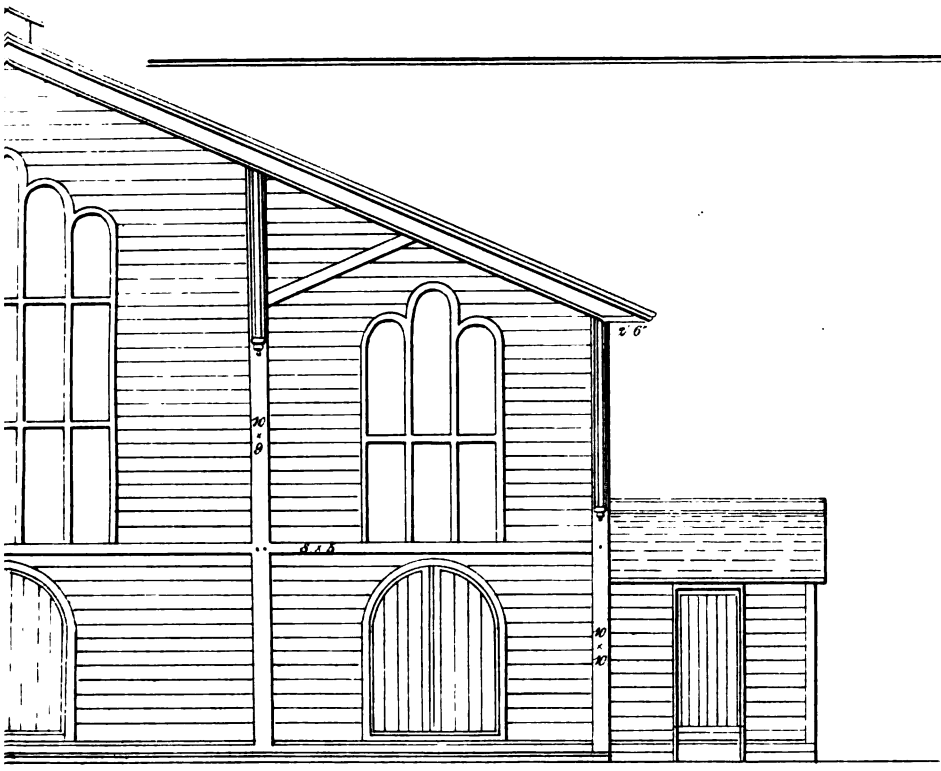
WEST EL



SIDE ELEV

Sca

10 5 0 n



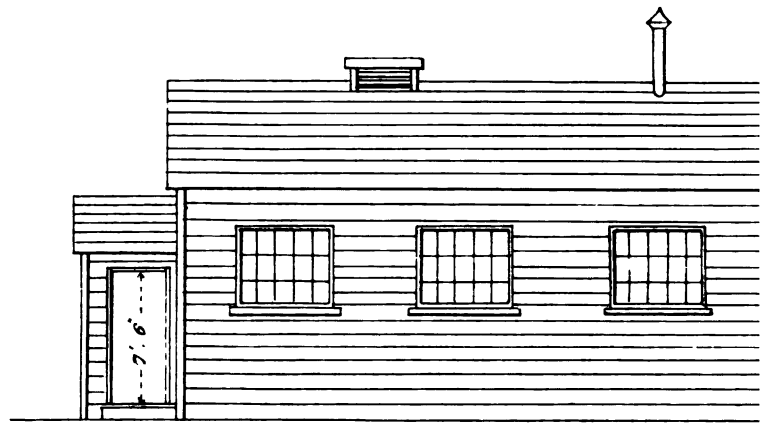
EVATION

TION

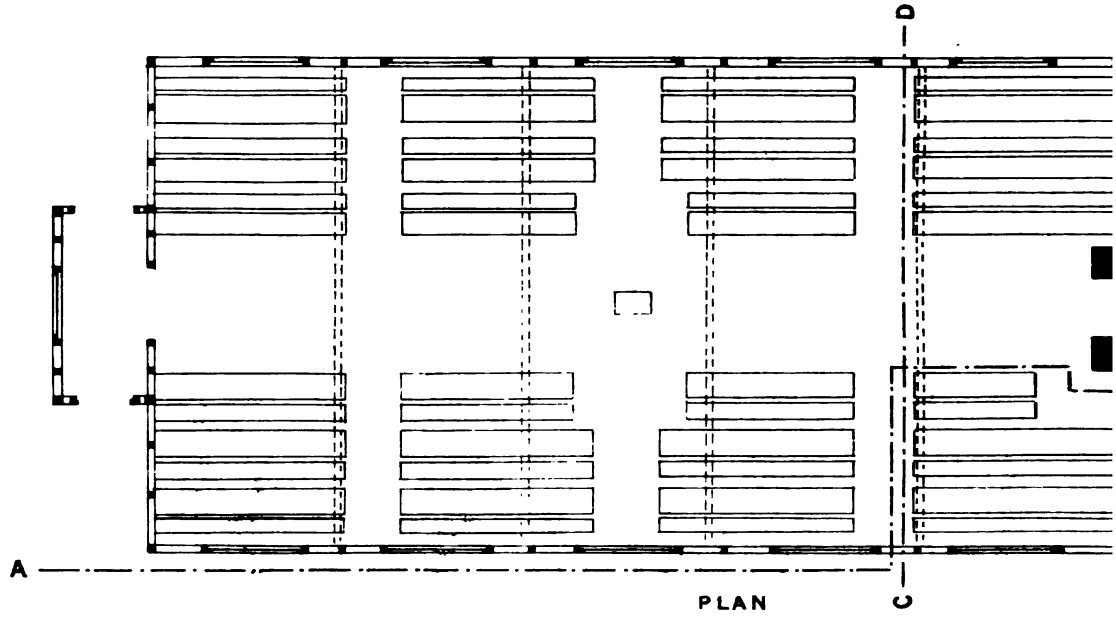
20 30 40 Feet

E. J. Hardy, Lith. 9, Dame St. Dublin

SCH



ELEVATION

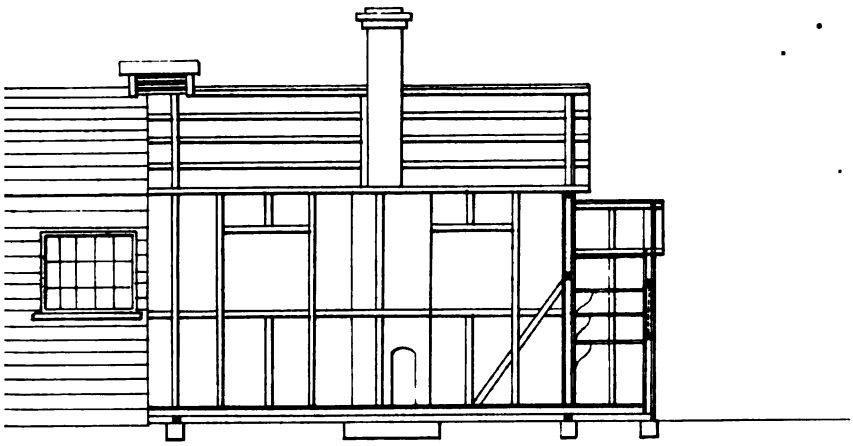


PLAN

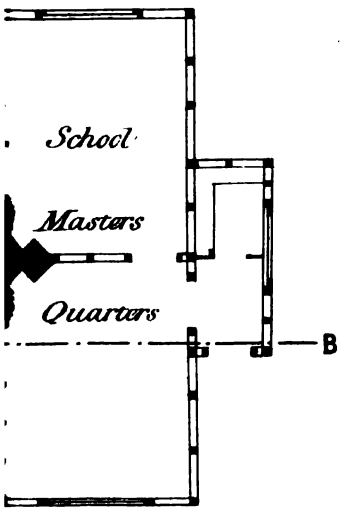
Sc

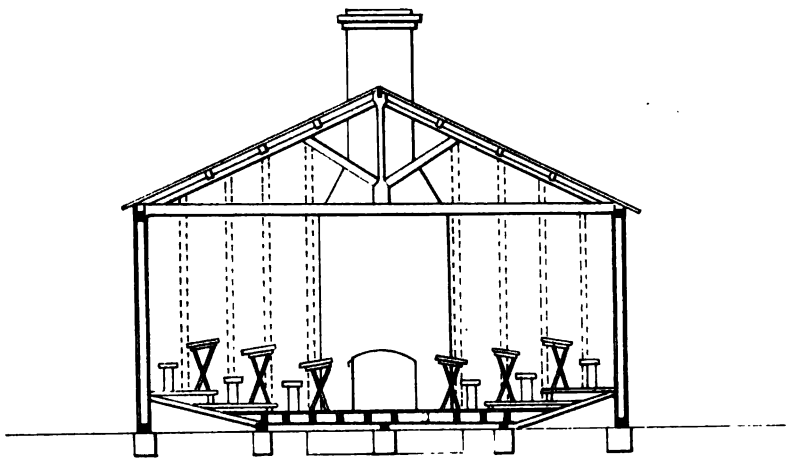
10 5 0 10

O O L S



ND SECTION ON A.B.





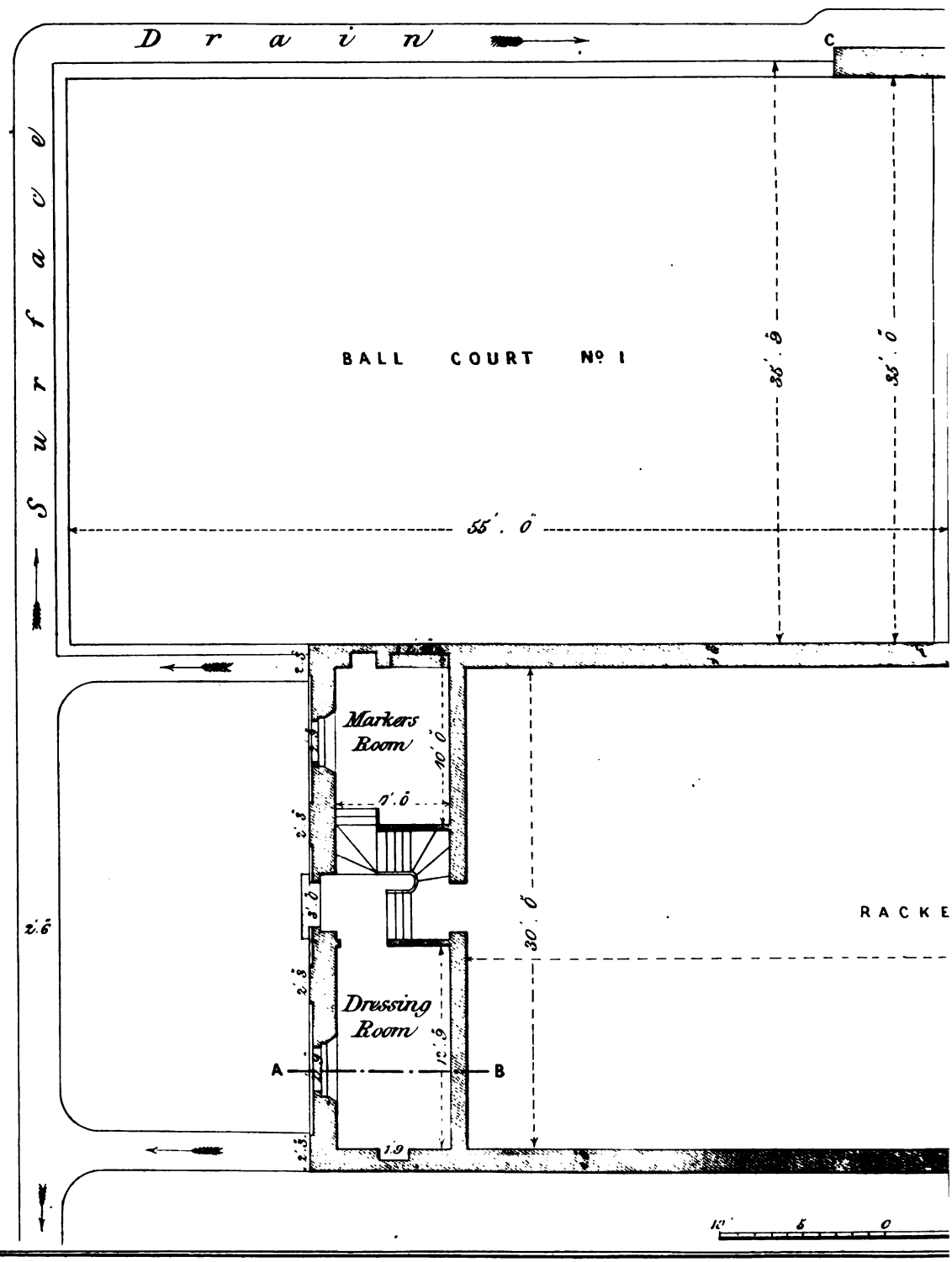
SECTION ON C.D.

le
20 30 40 Feet

E J. Harey, Lith. 9, Dame St. Dublin.

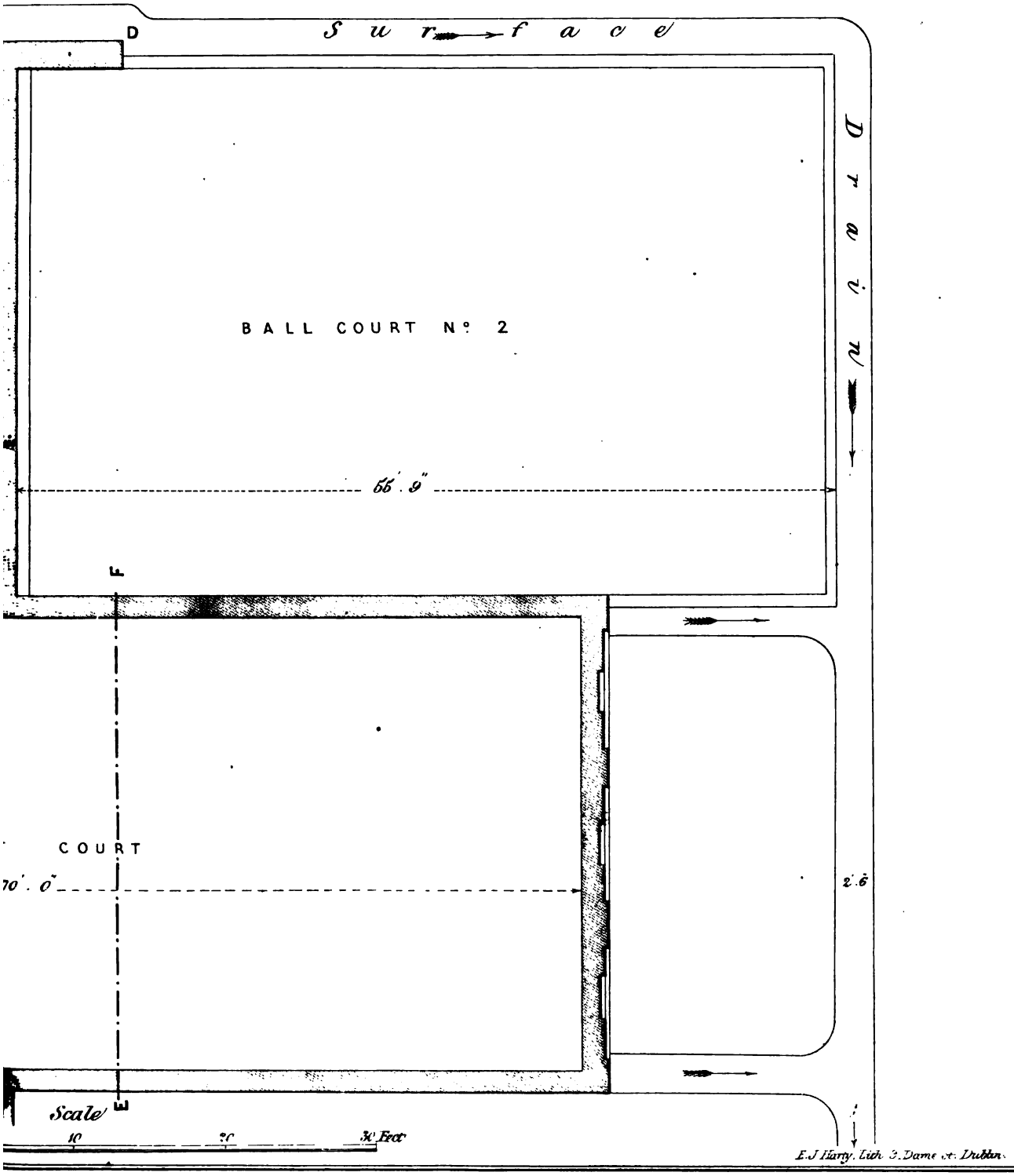
RACKET AND

Pl

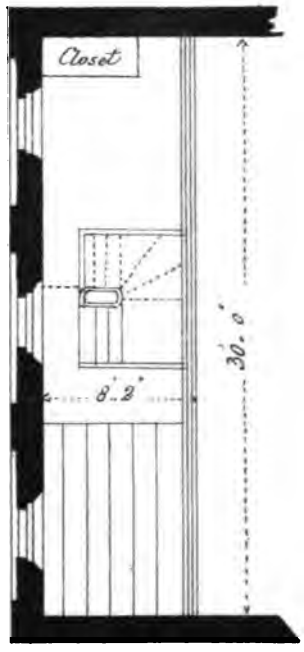


BALL COURTS

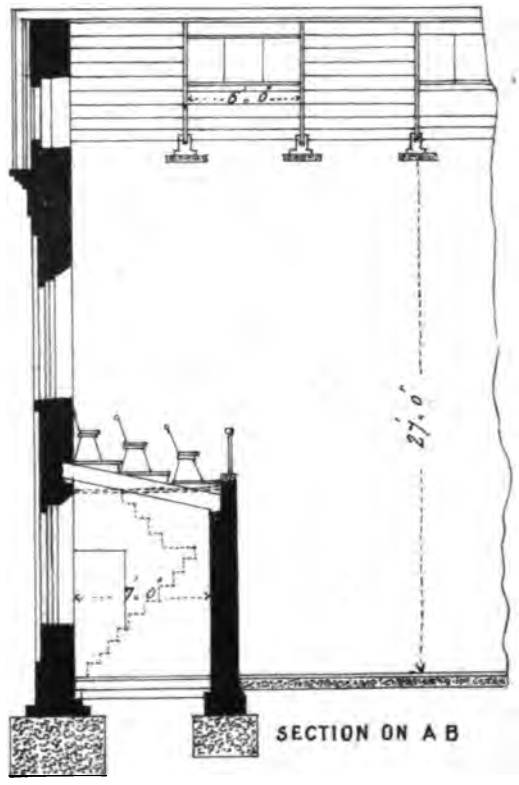
AN



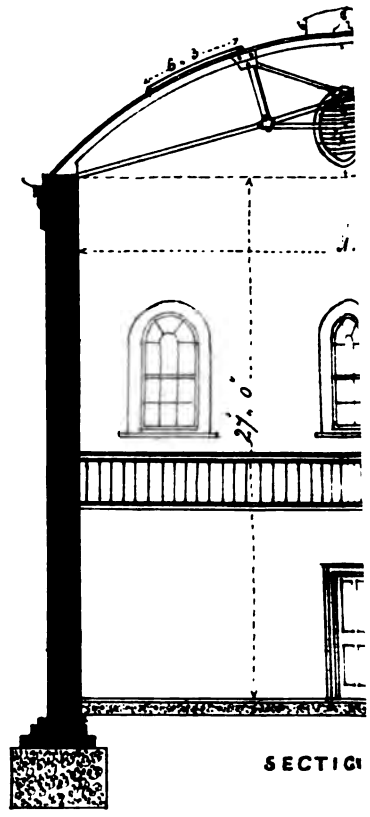
RACKET & N



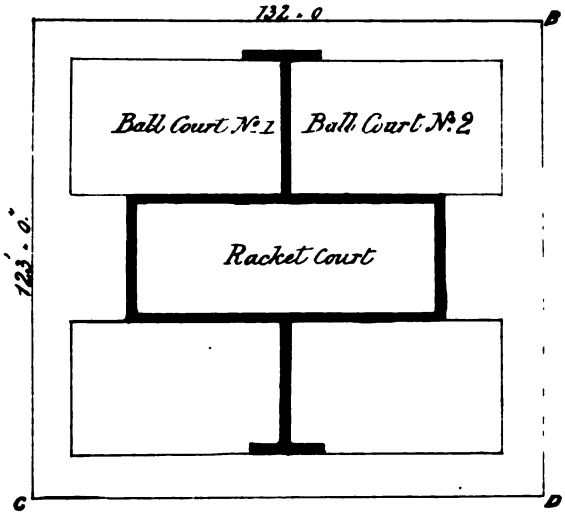
PLAN OF GALLERY



SECTION ON A B

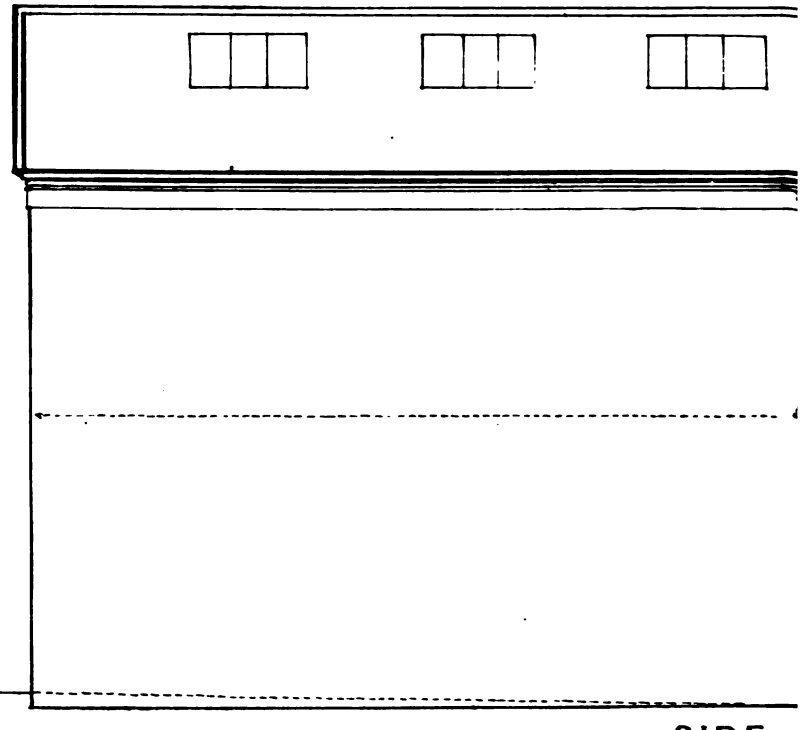


SECTIO



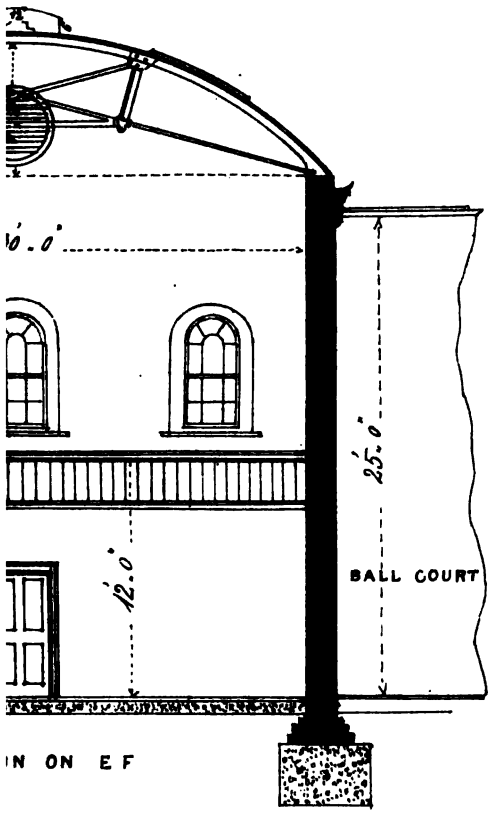
GENERAL PLAN OF SITE

Scale. 50. Feet to 1 Inch

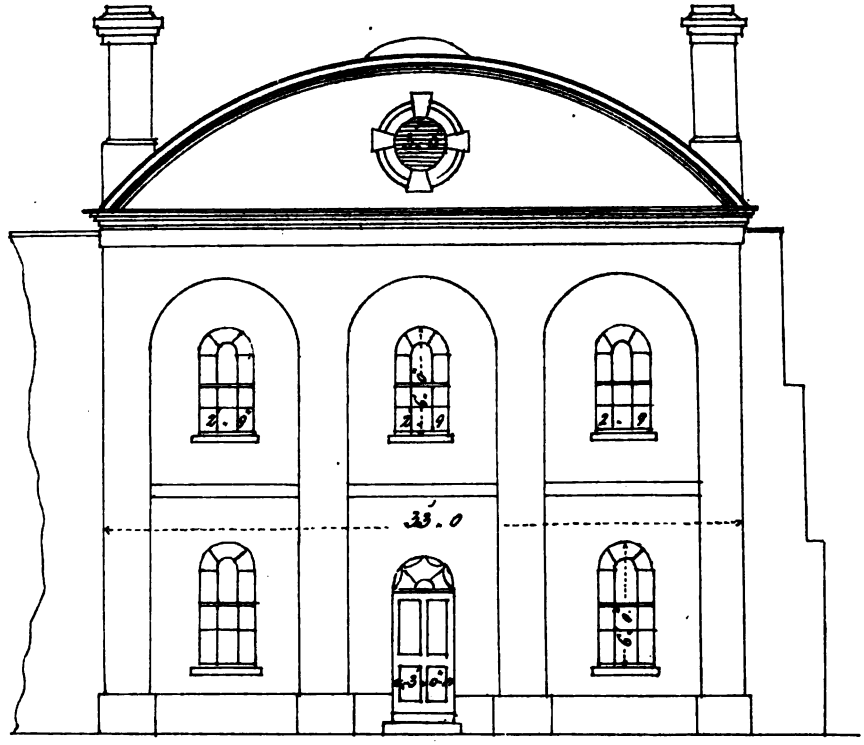


SIDE

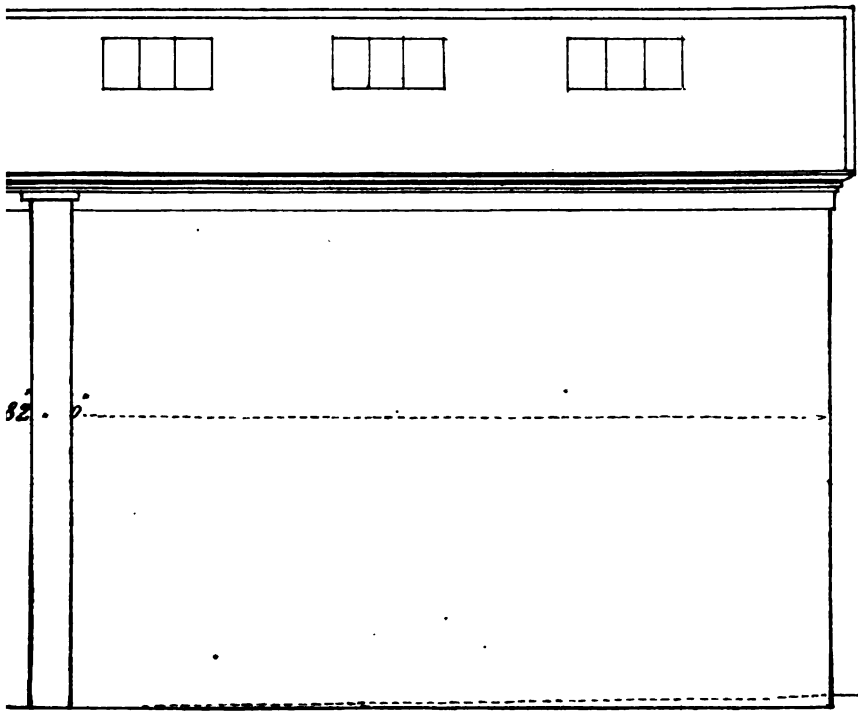
BALL COURTS



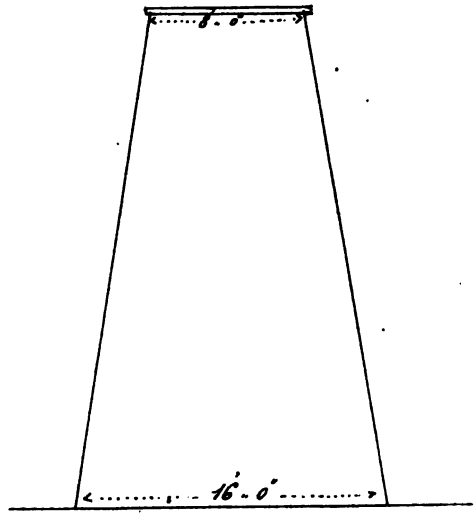
IN ON E F



END ELEVATION.



ELEVATION

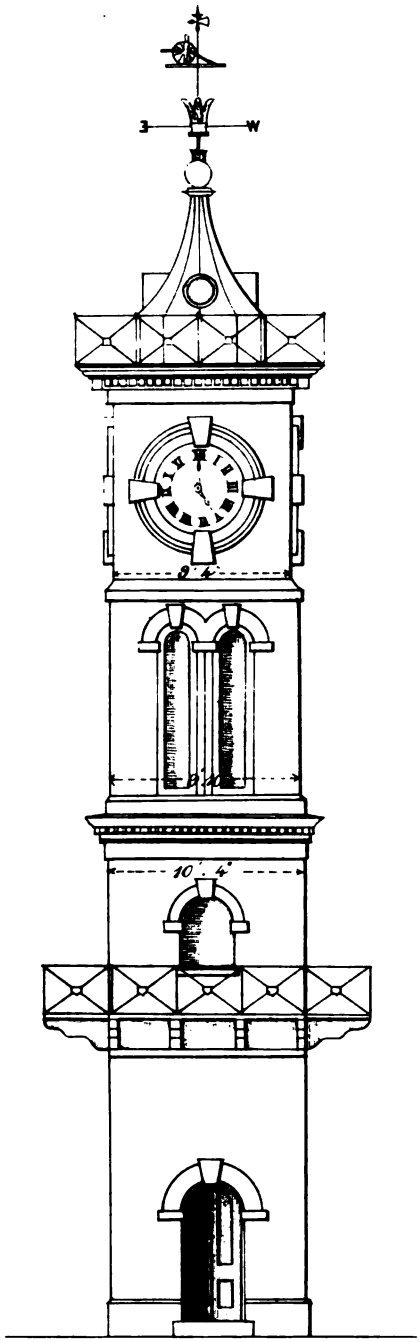


ELEVATION ON C D

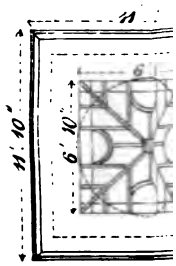
Scale of Feet 20 30 40 Feet

WALLER & CO LITH

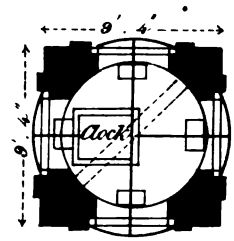
CLOCK T



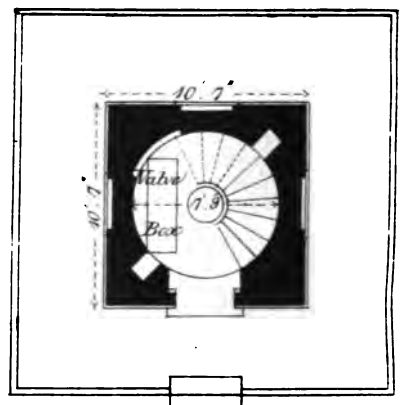
ELEVATION



PLAN OF ROOF



PLAN OF CLOCK FLOOR

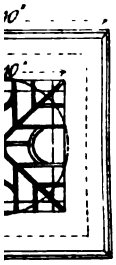


GROUND PLAN

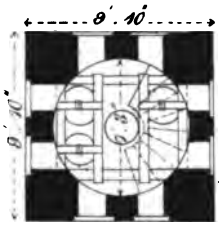
Scale

10 5 0 ft

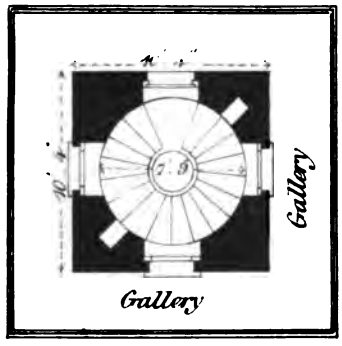
TOWER



& GALLERY

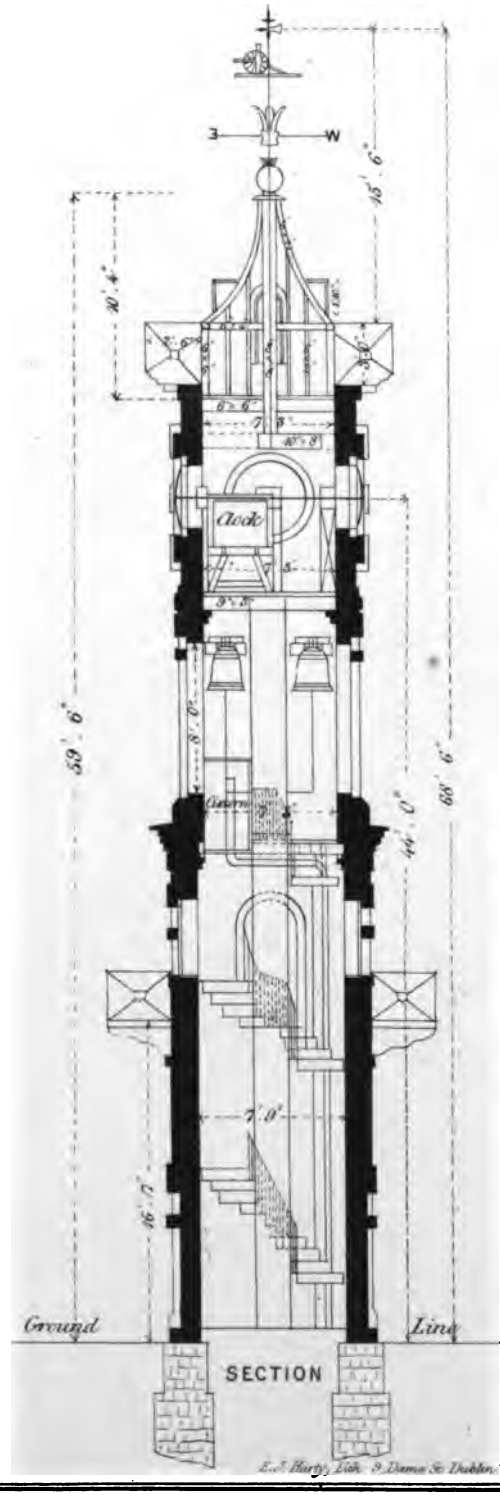


PLAN OF BELFRY



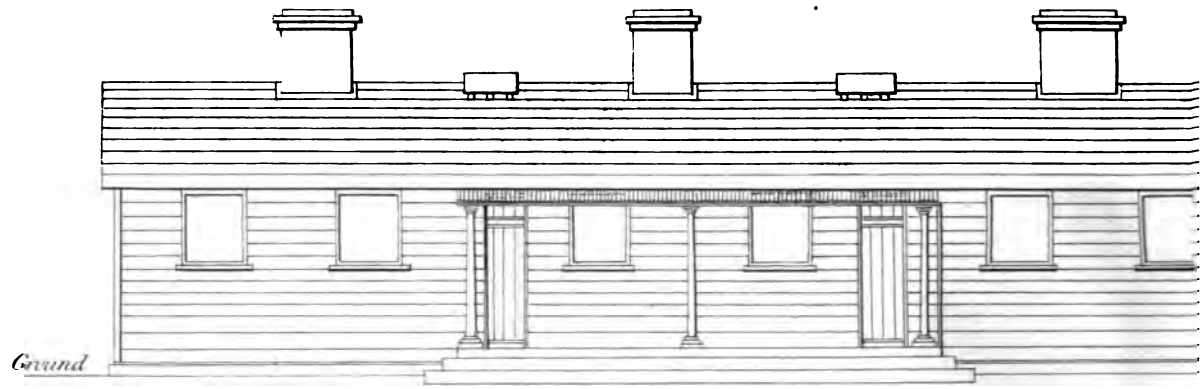
PLAN OF GALLERY FLOOR

20 30 Feet

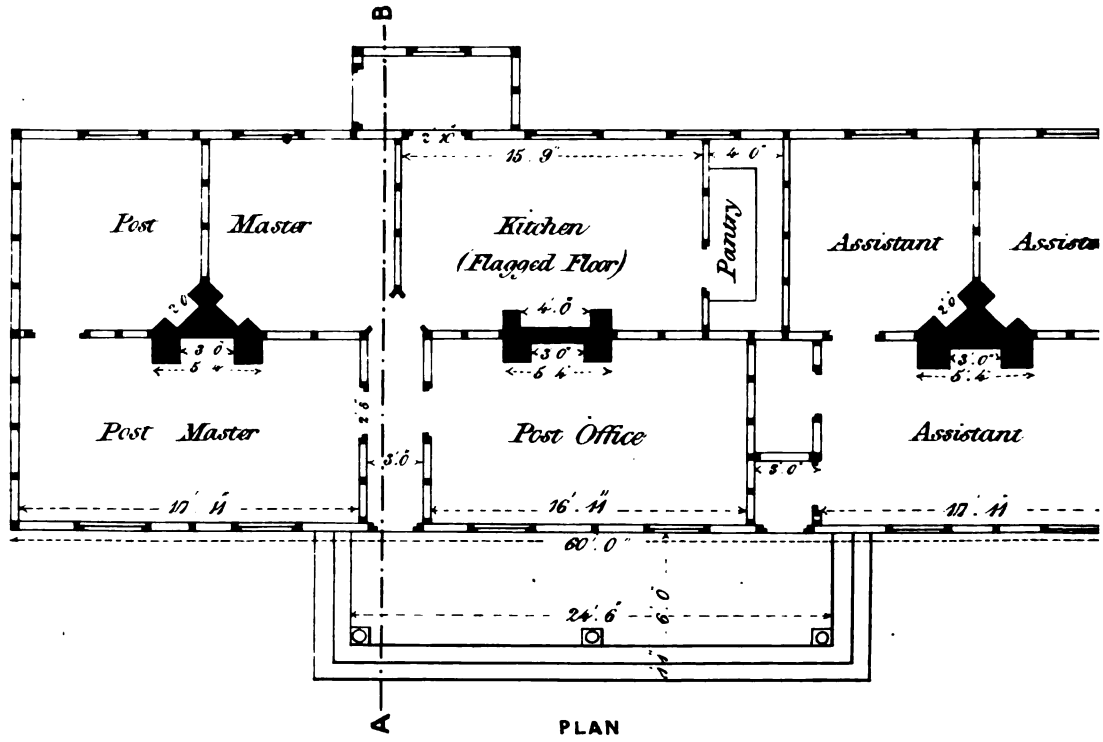


SECTION

POST OFFICE AN

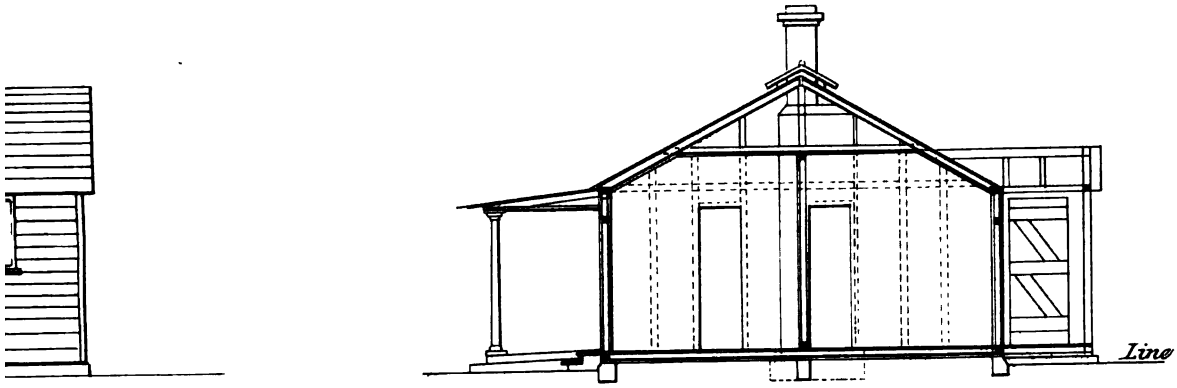


ELEVATION

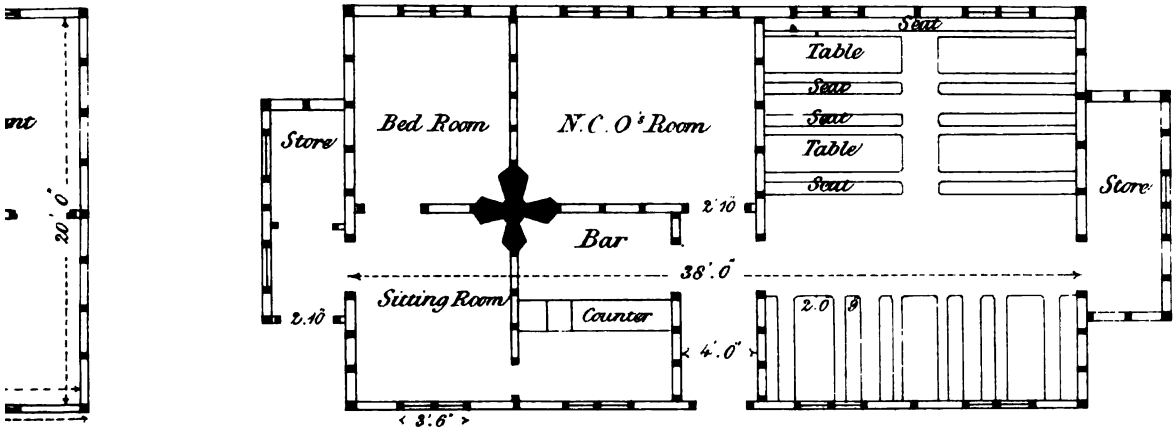


PLAN

D SUTLERS HUT



SECTION ON A.B.



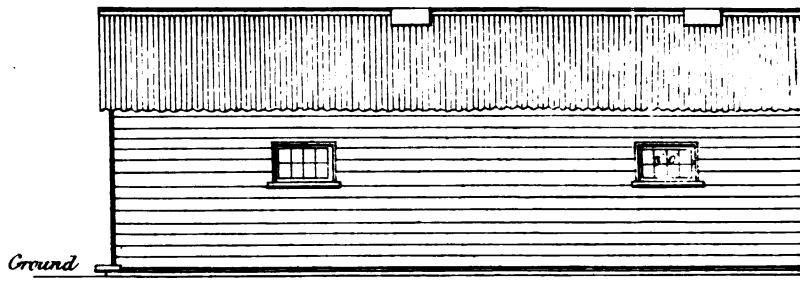
PLAN OF SUTLERS HUT

Scale
10 20 30 Feet

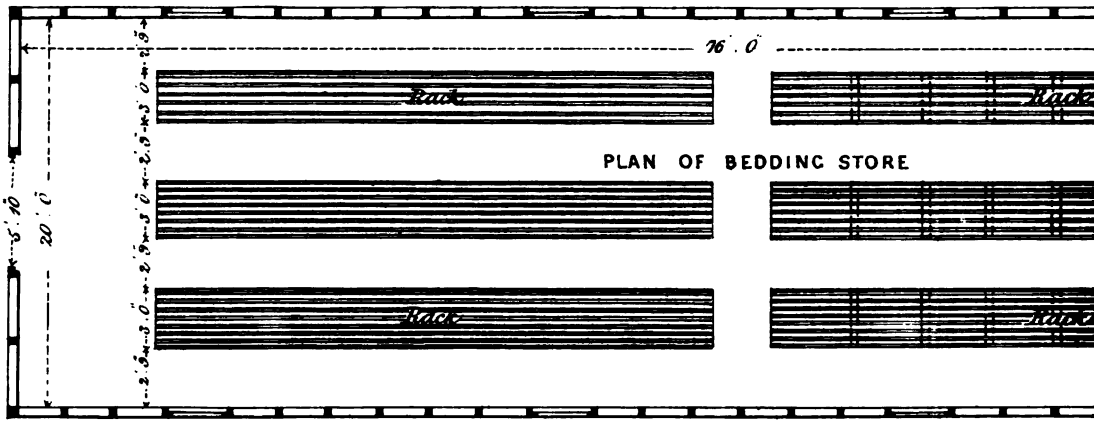
E.J.Harty, Lith. 9. Dame St. Dublin.

BARRACK

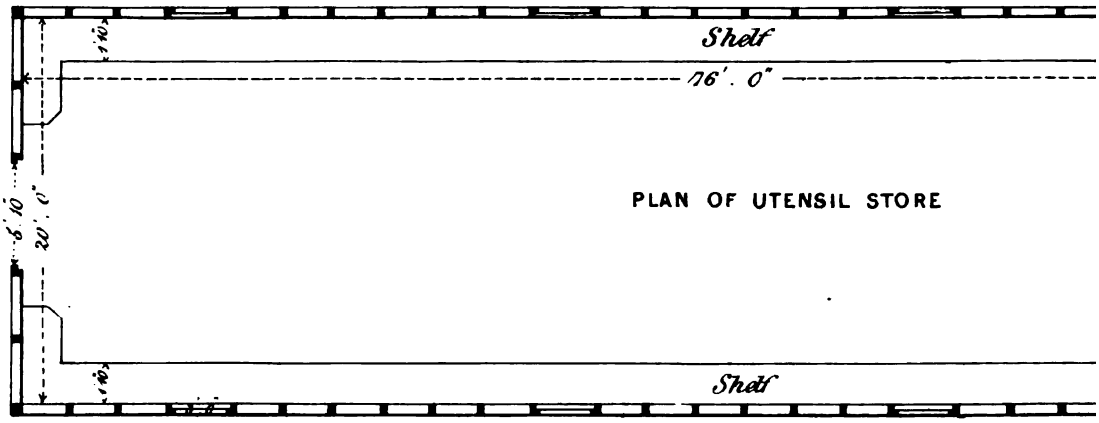
FOR BEDDINC



ELE



PLAN OF BEDDING STORE



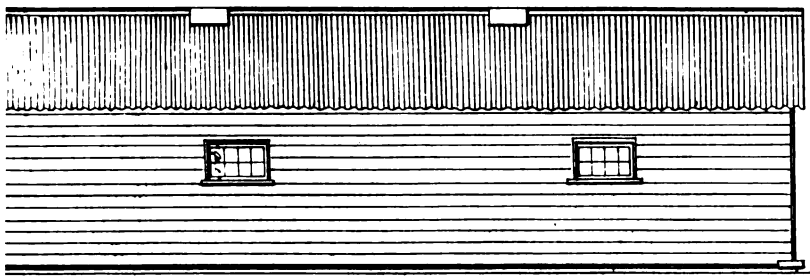
PLAN OF UTENSIL STORE

NOTE. One of the Straw Sheds is similar in construction, but has no shelves.

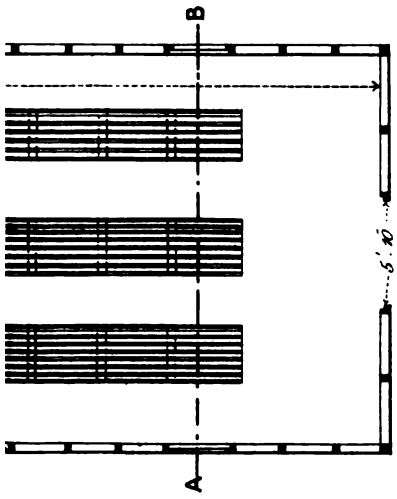
10 5 0

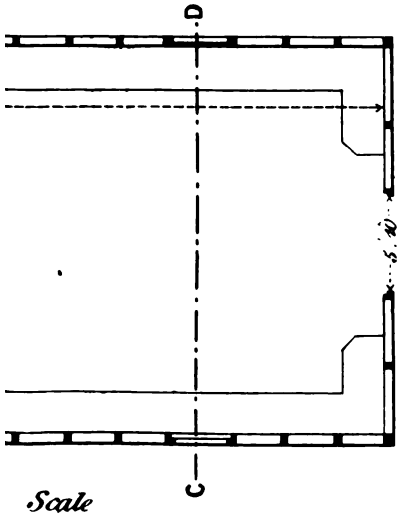
STORES

AND UTENSILS

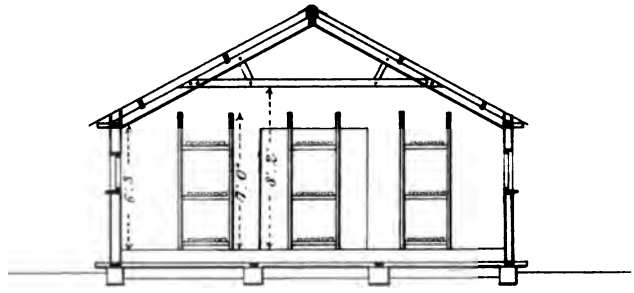


/ATION

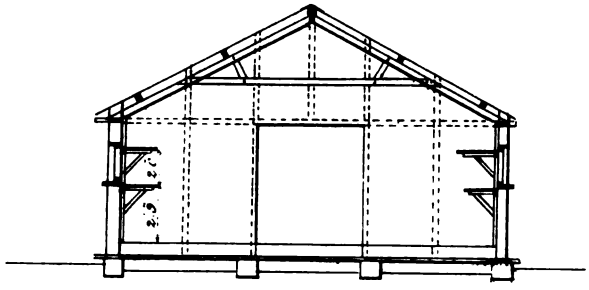




Scale
10 20 30 Feet



SECTION ON A.B.

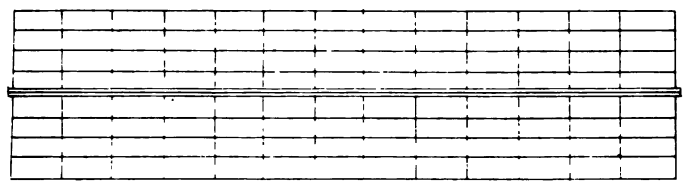


SECTION ON C.D.

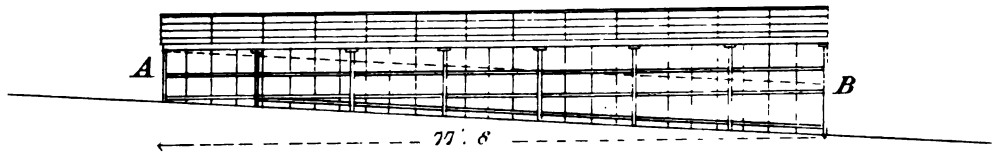
E.J Harg Lith 9. Dame St. Dublin

BARRACK

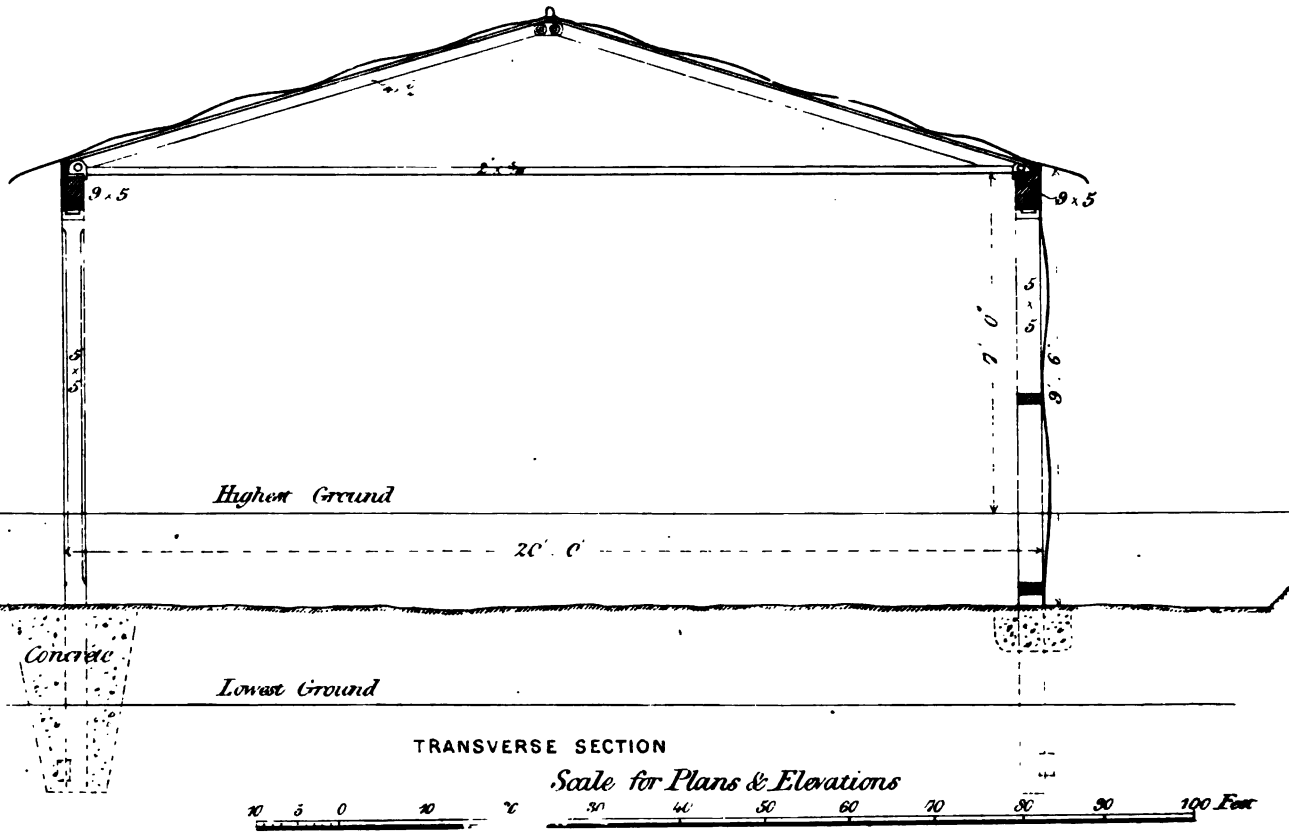
STRAW SHEDS WITH MALLET'S PA



PLAN OF SHED LEFT DIVISION



ELEVATION



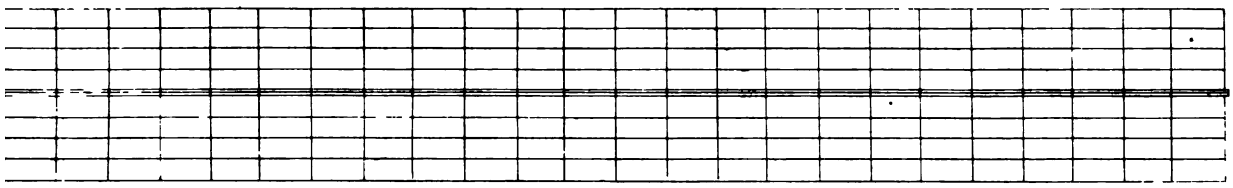
TRANSVERSE SECTION

Scale for Plans & Elevations

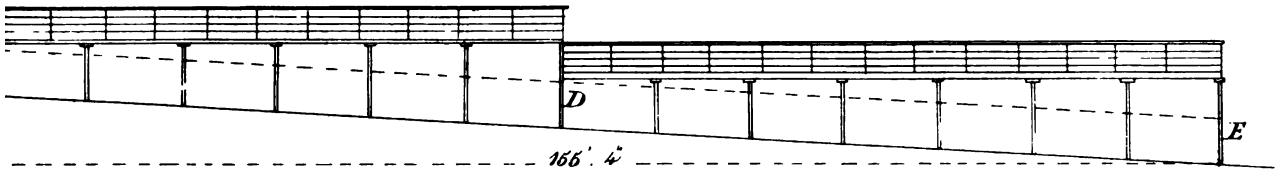
10 5 0 10 20 30 40 50 60 70 80 90 100 Feet

STORES

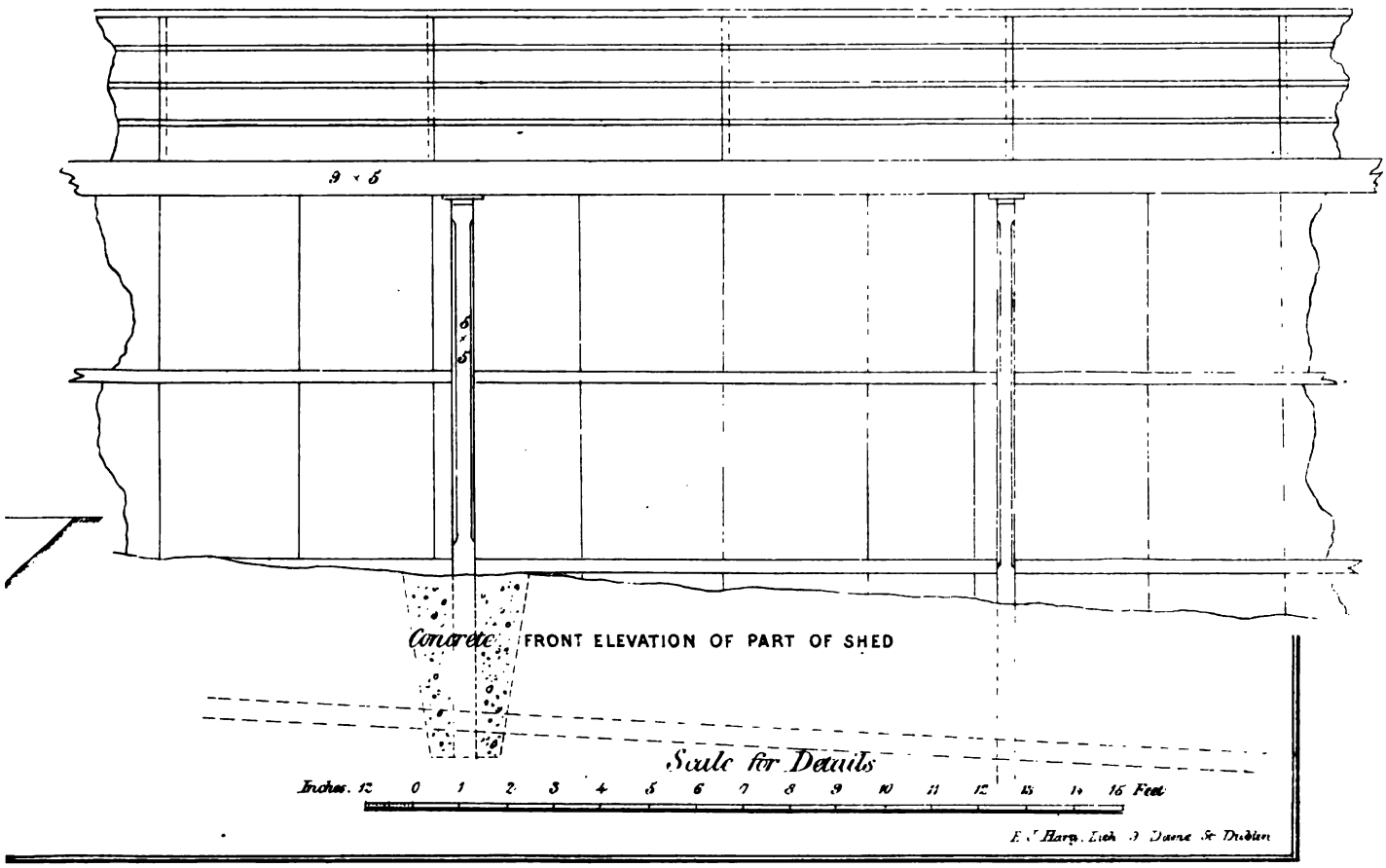
TENT BUCKLED PLATE ROOFING



PLAN OF SHED RIGHT DIVISION.



ELEVATION



FRONT ELEVATION OF PART OF SHED

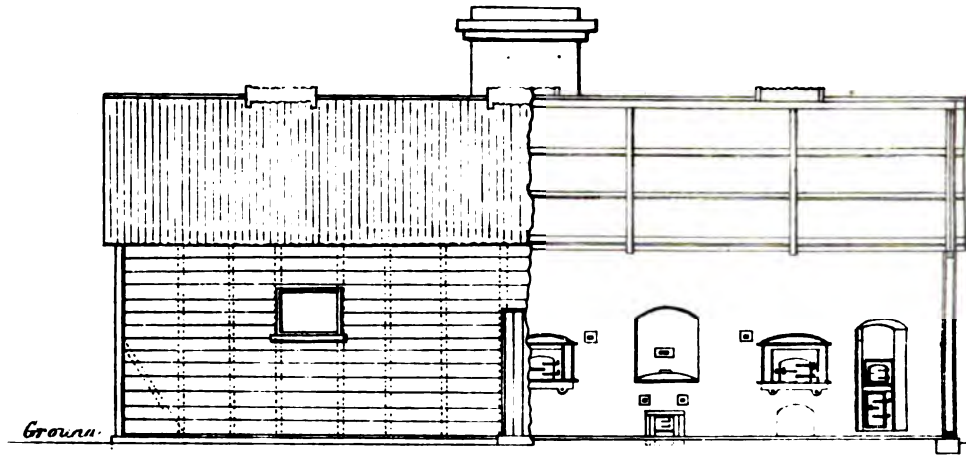
Scale for Details

Inches. 12 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Feet

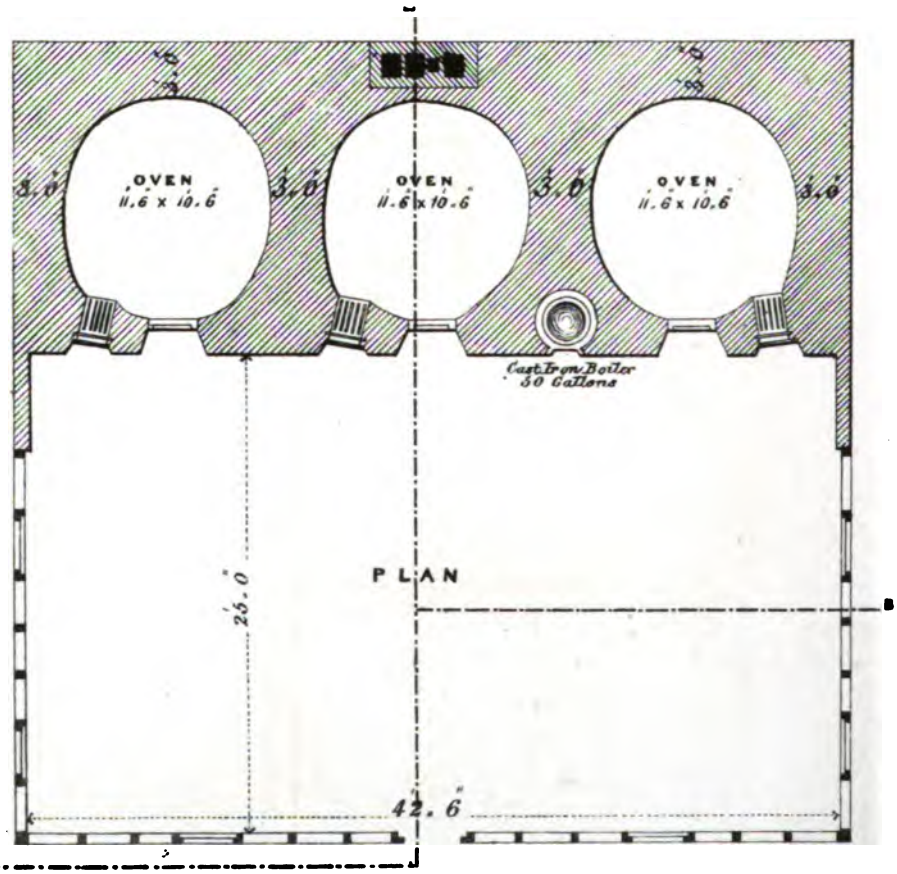
E. T. Hargy. Lith. 3 Dame St. Dublin

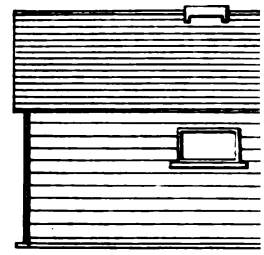
BAK

BREAD AND M



ELEVATION AND SECTION ON LINE A.B.



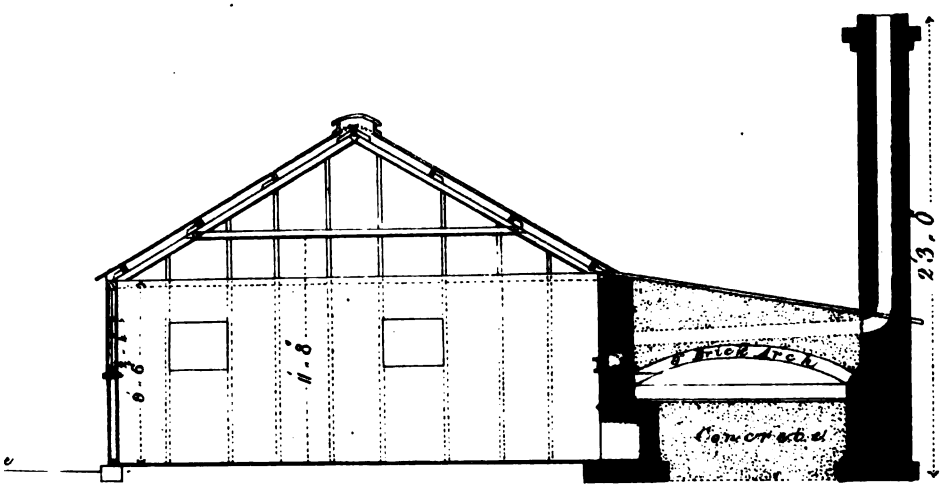


EL

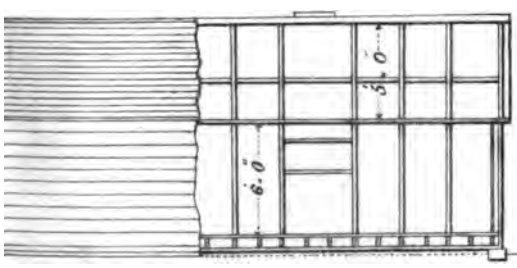
S

E R Y

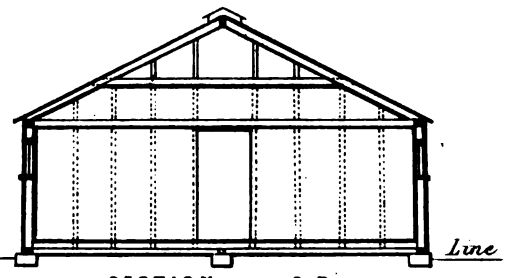
E A T S T O R E



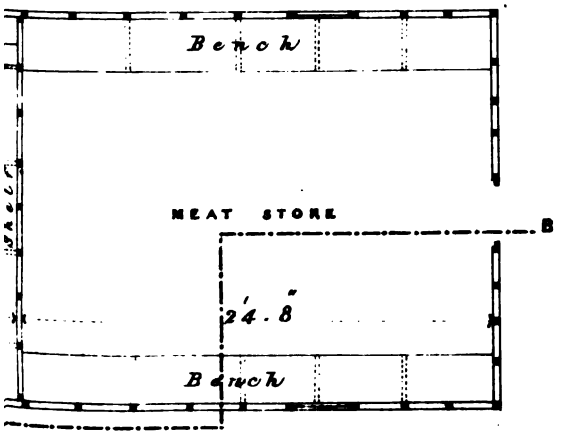
SECTION ON LINE C.D.



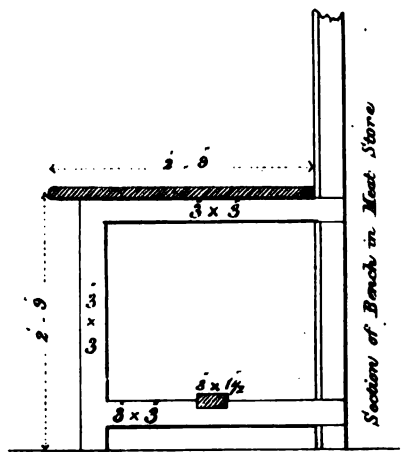
IVATION AND SECTION ON LINE A.B.

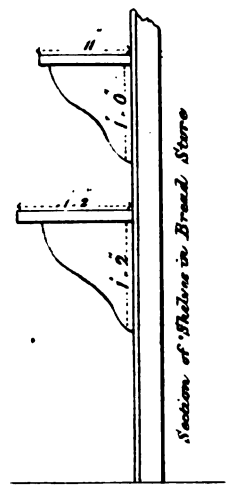


SECTION ON LINE C.D.



PLAN



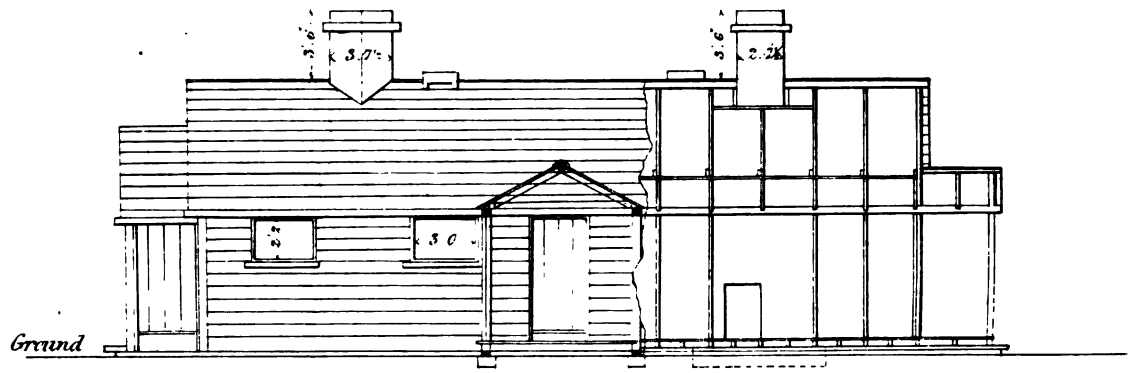


Scale ½ Inch to 1 Foot.

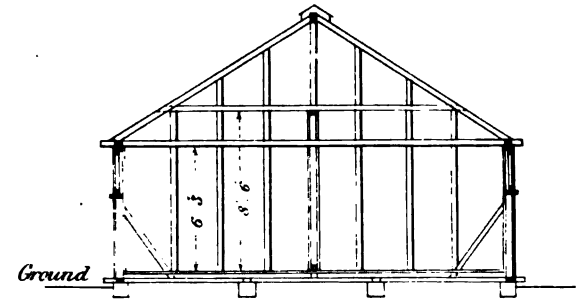
Lith.d at the Ordnance Survey Office Dublin

BUTC

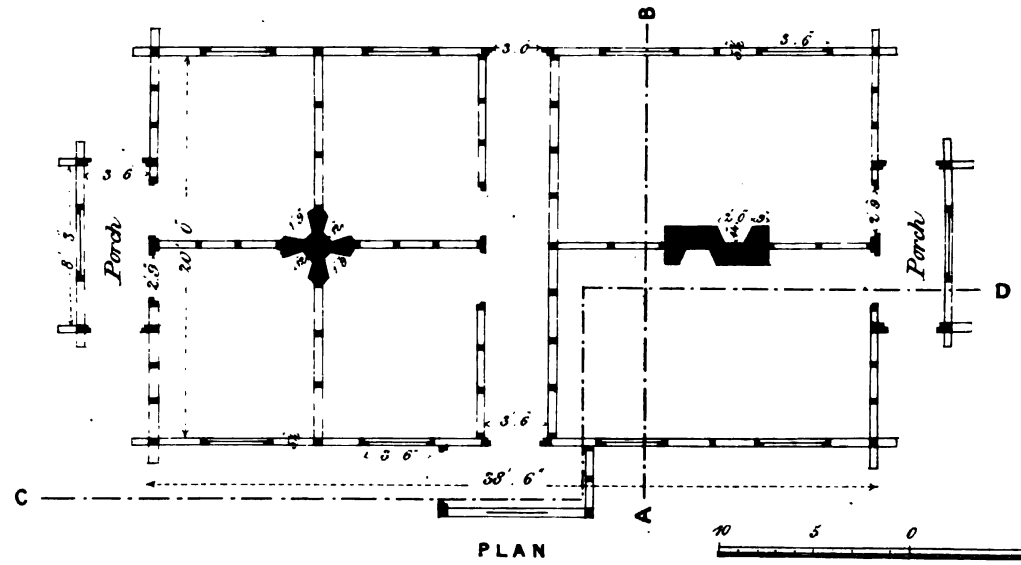
HUTS FOR SUPERINTENDENT



ELEVATION AND SECTION C.D.



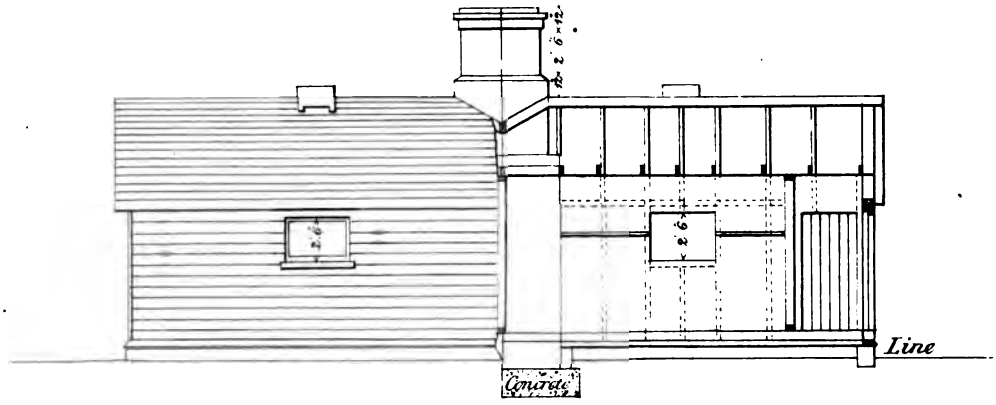
SECTION ON A.B.



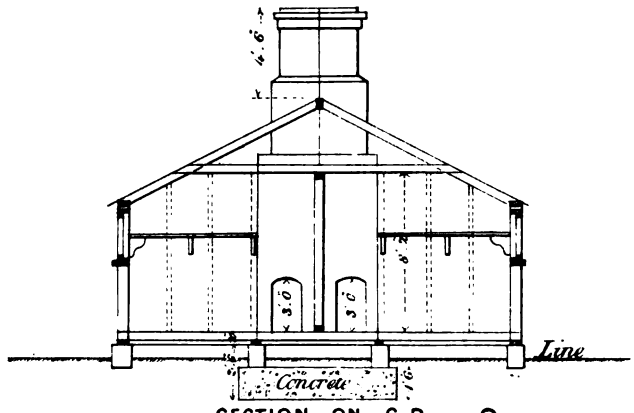
PLAN

H E R Y

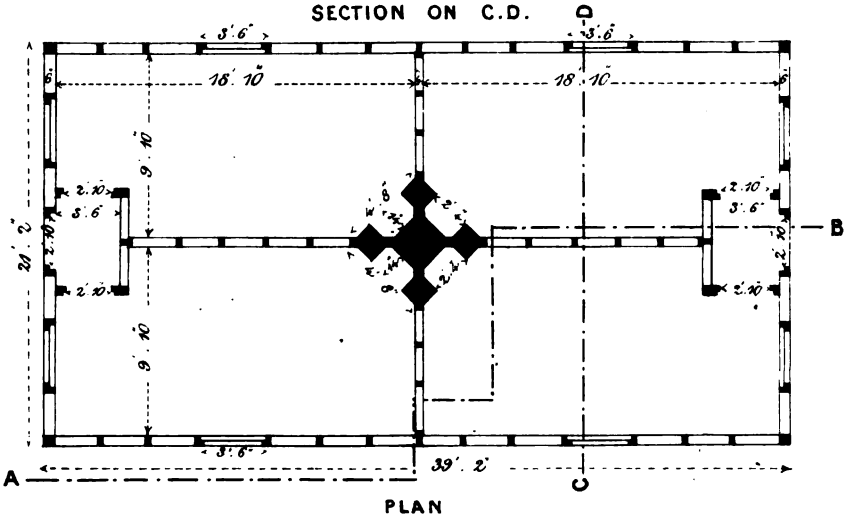
HUT FOR BUTCHERS MEN



PART ELEVATION & SECTION A.B.



SECTION ON C.D.



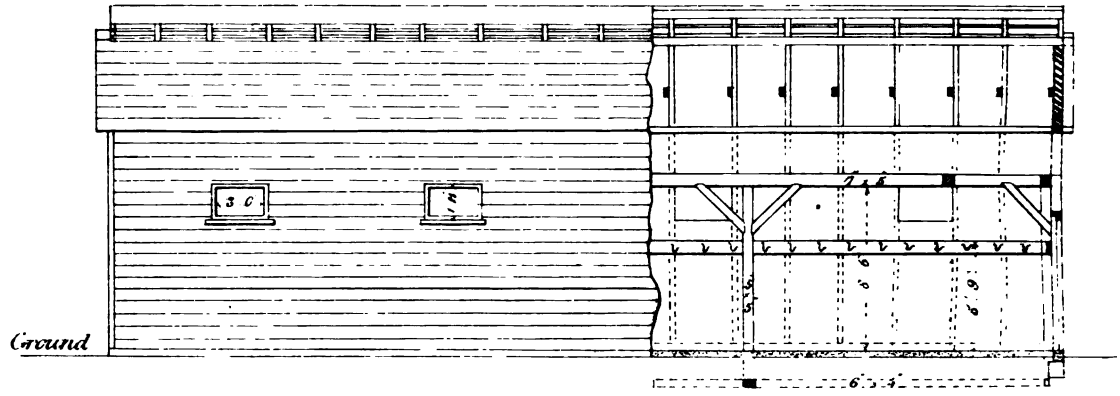
PLAN

20 30 Feet

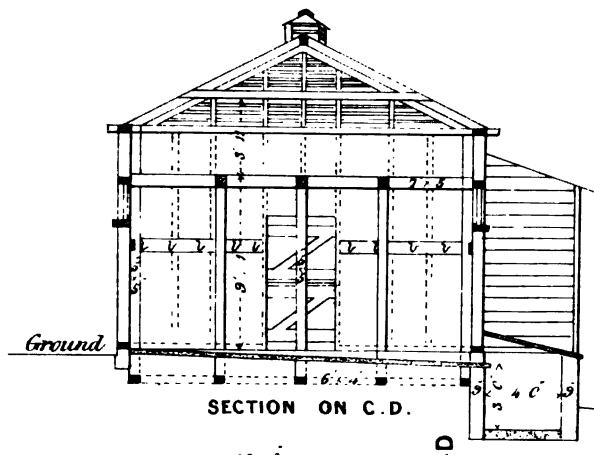
E.J. Hary, Lith. 9, Dame St. Dublin

BUTC

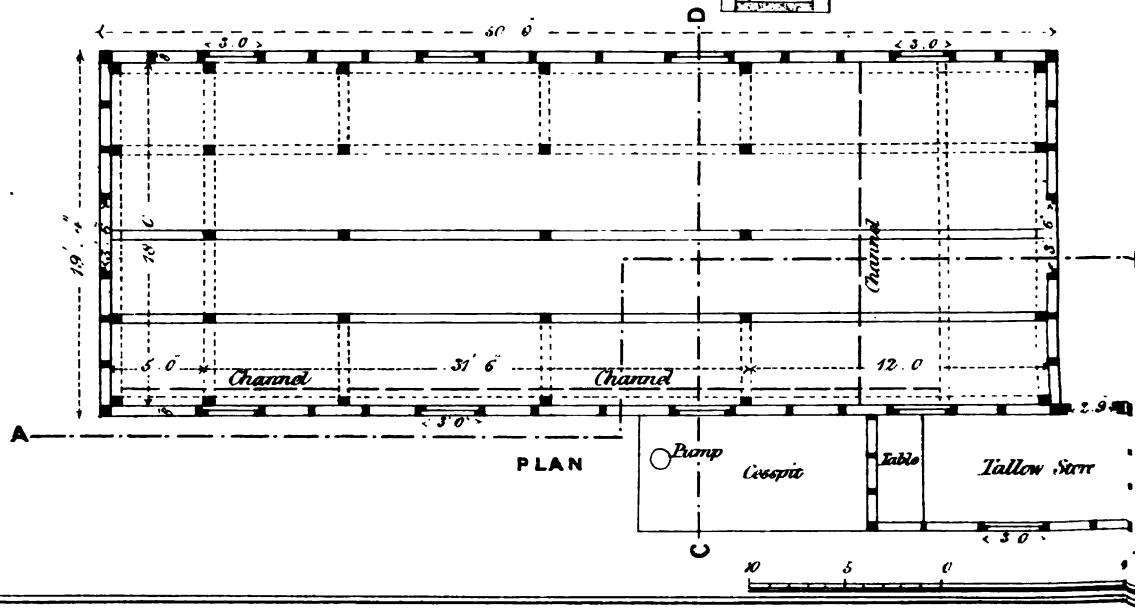
SLAUGHTER HOUS



ELEVATION AND SECTION ON A.B.



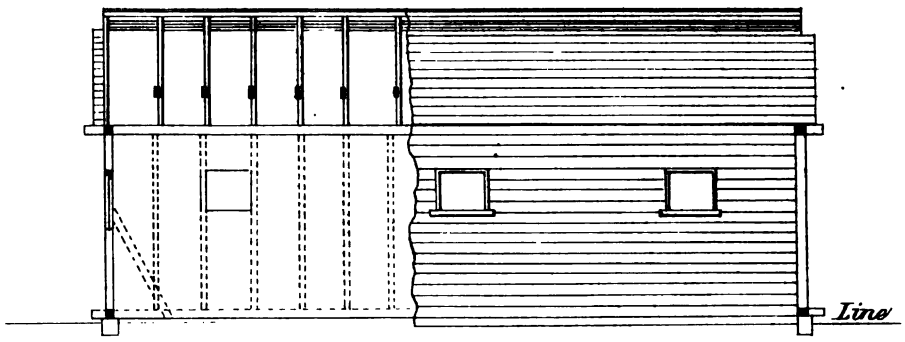
SECTION ON C.D.



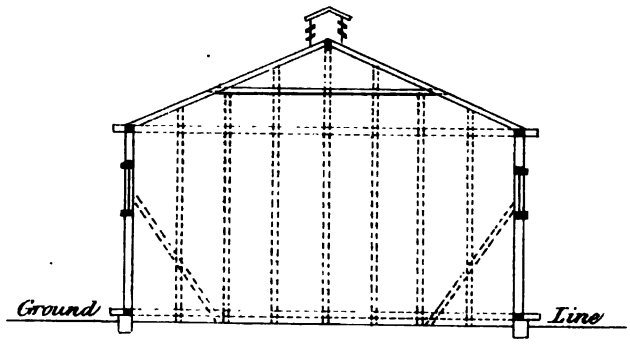
PLAN

CHERY

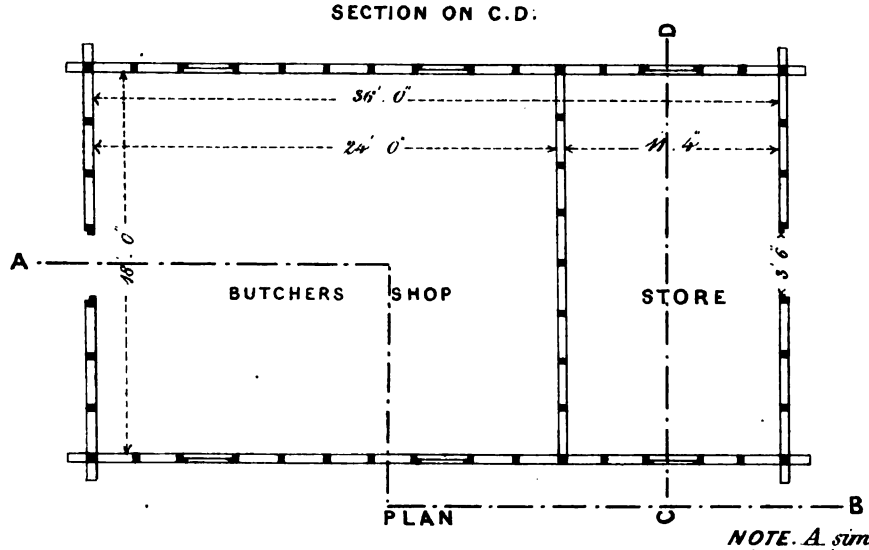
USE AND STORE



ELEVATION AND SECTION ON A.B.



SECTION ON C.D.



PLAN

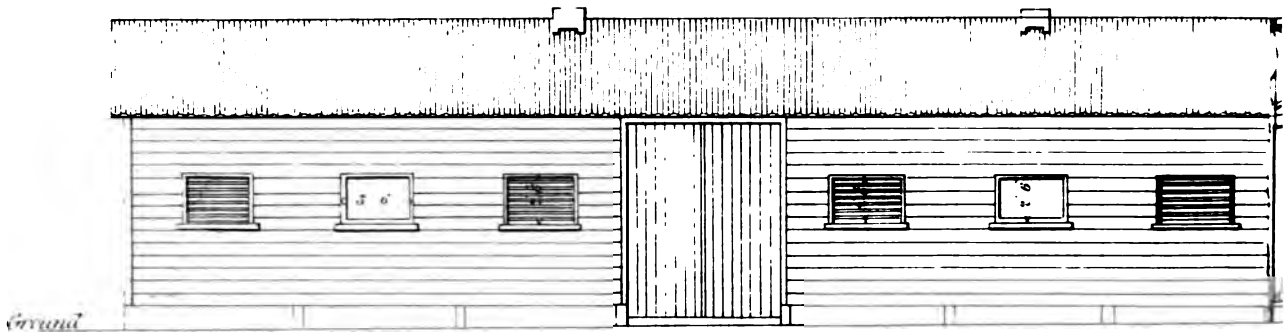
NOTE. A similar hut, but without the partition is provided for a cattle stall.

Scale 10 20 30 Feet

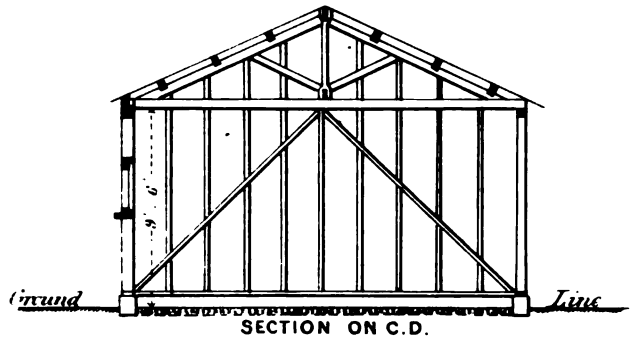
E.J. Harty, Lith. 3. Dame St. Dublin.

COMMIS

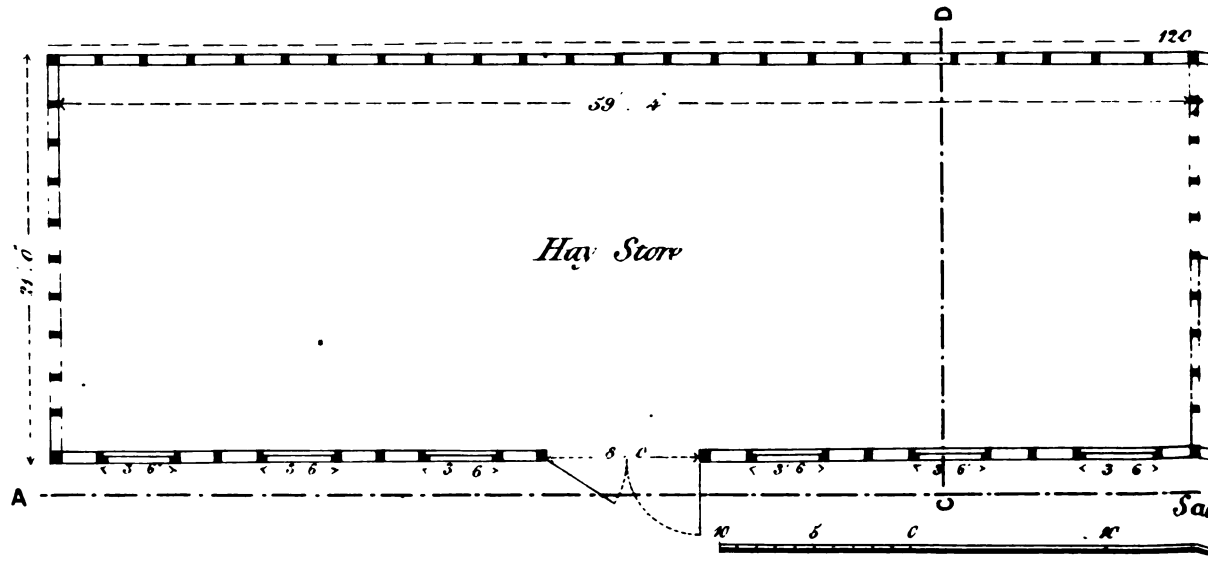
HAY AND S



ELEVATION AND

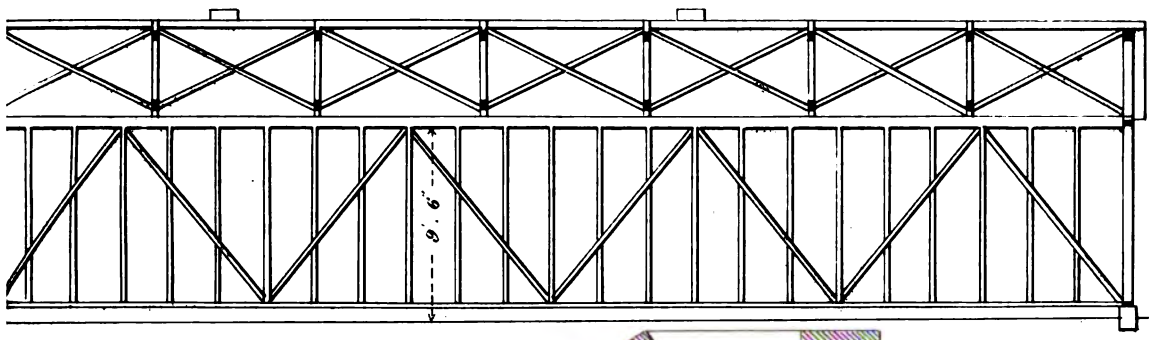


SECTION ON C.D.

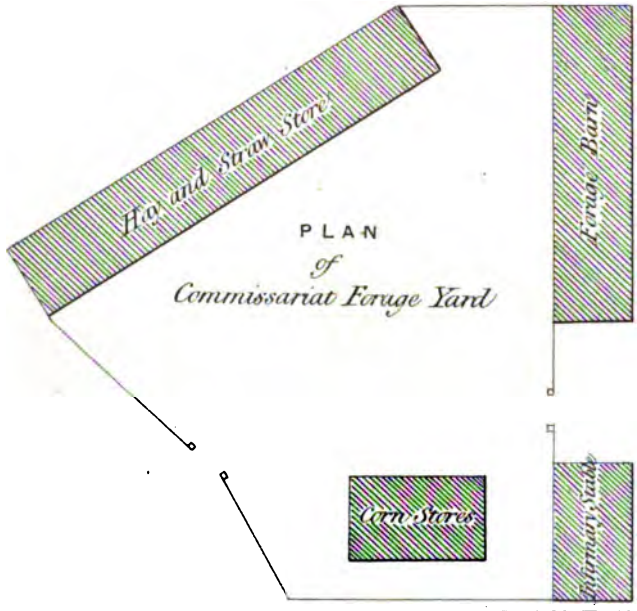


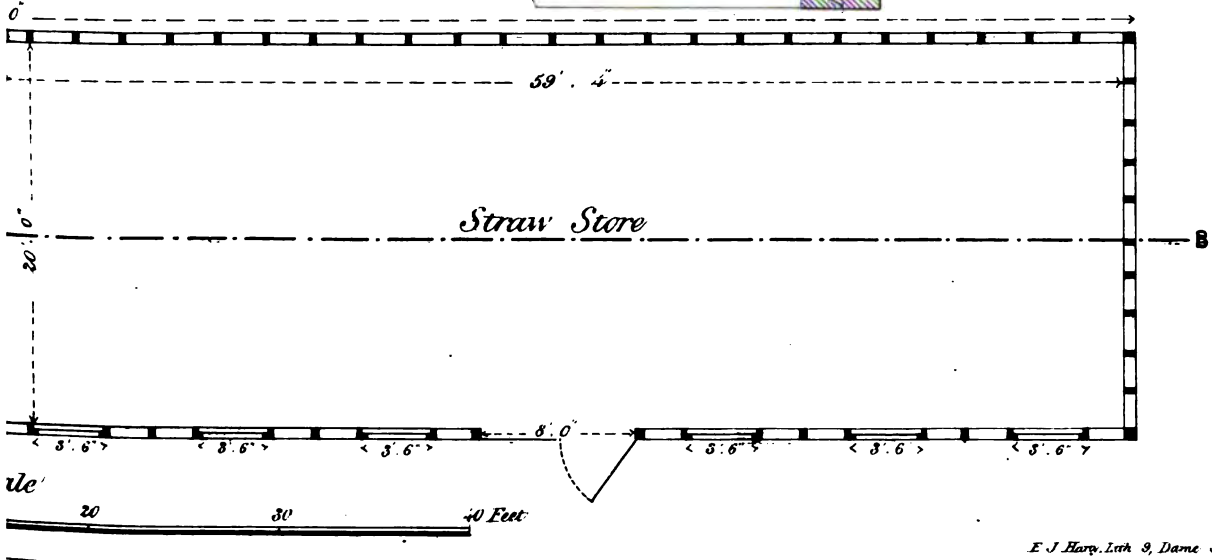
SARIAT

TRAW STORE



SECTION ON A,B.





Scale

20 30 40 Feet

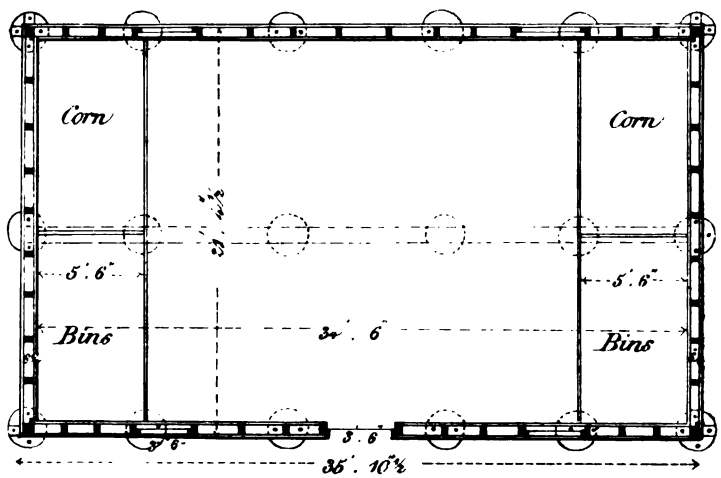
E. J. Hare, Lith. 9, Dame St. Dublin.

COMMISS

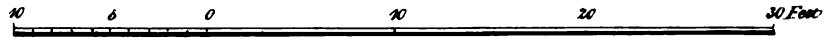
CORN ST

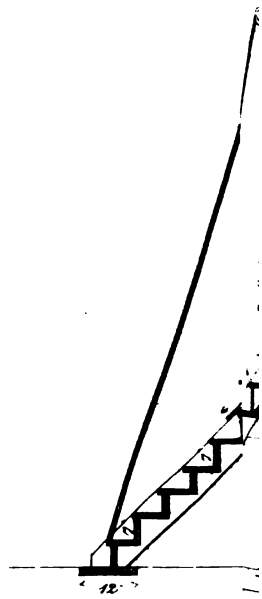
FRONT ELEVATION

PLAN



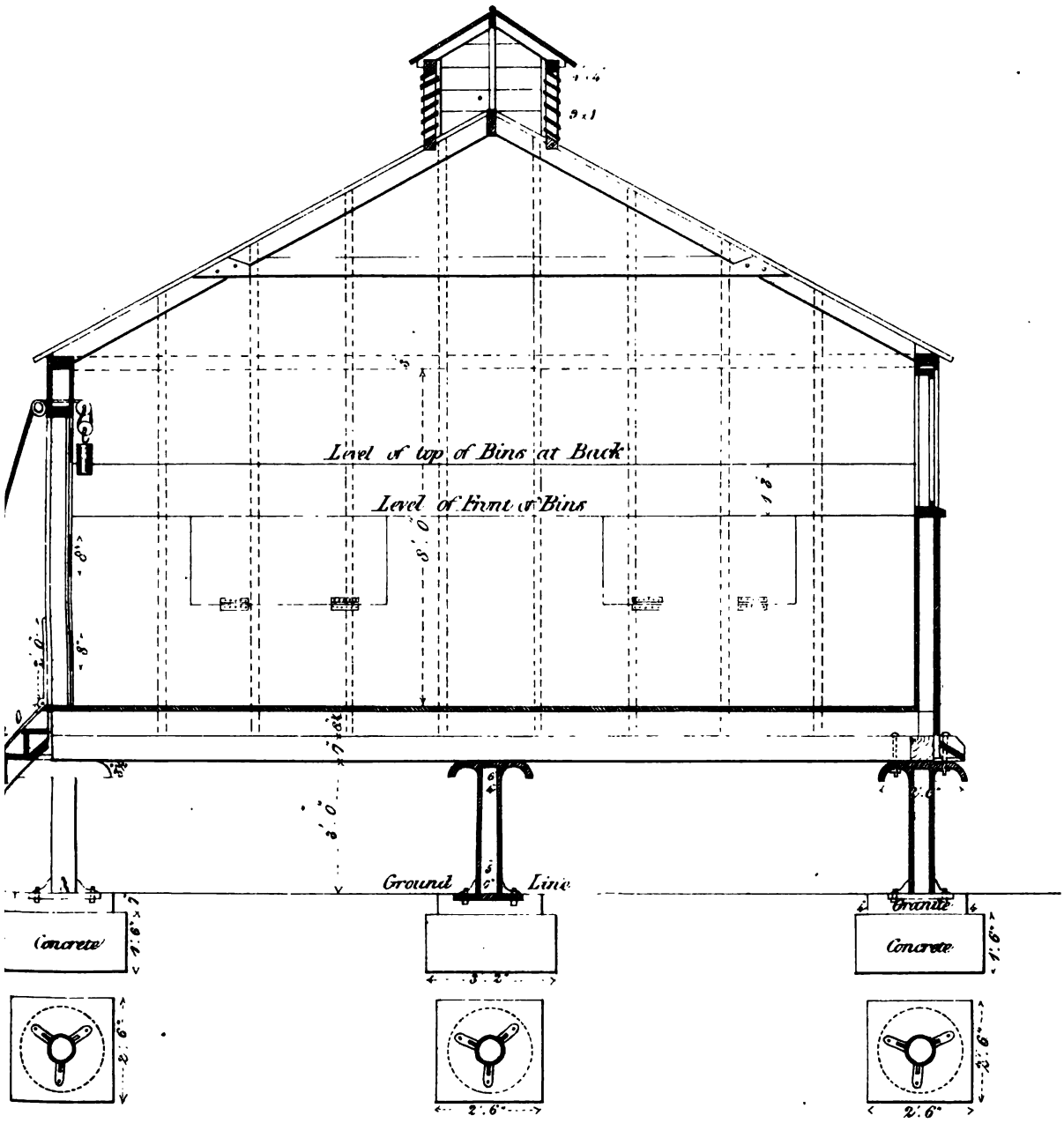
Scale for Plan





SARIAT

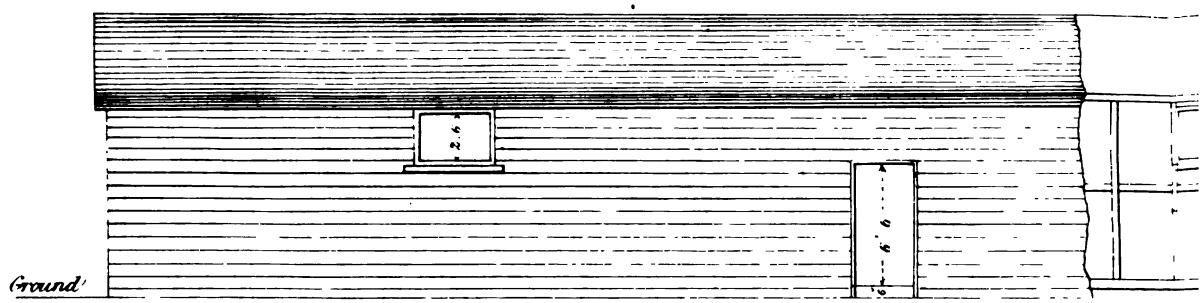
STORE.



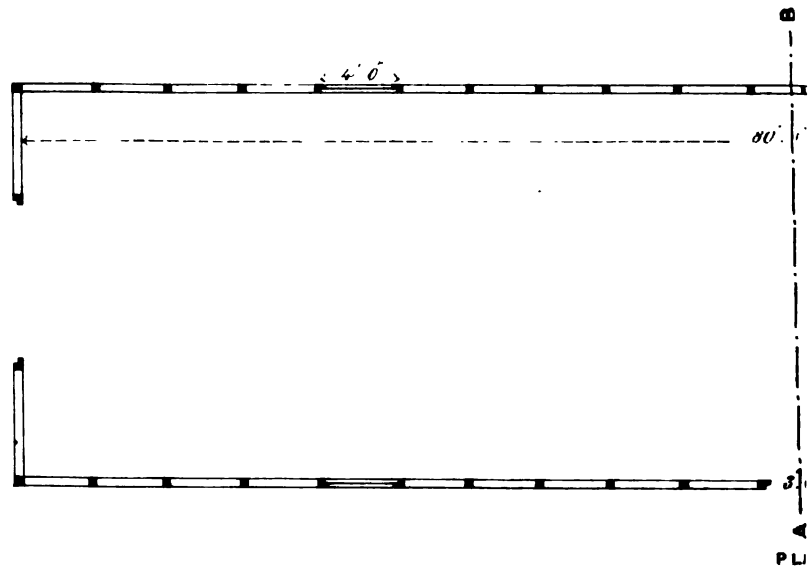
E. J. Harty, Lith. 9 Dame St. Dublin.

COMMISS

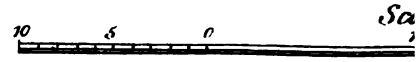
FORACE I



ELEVATION AND SECTION



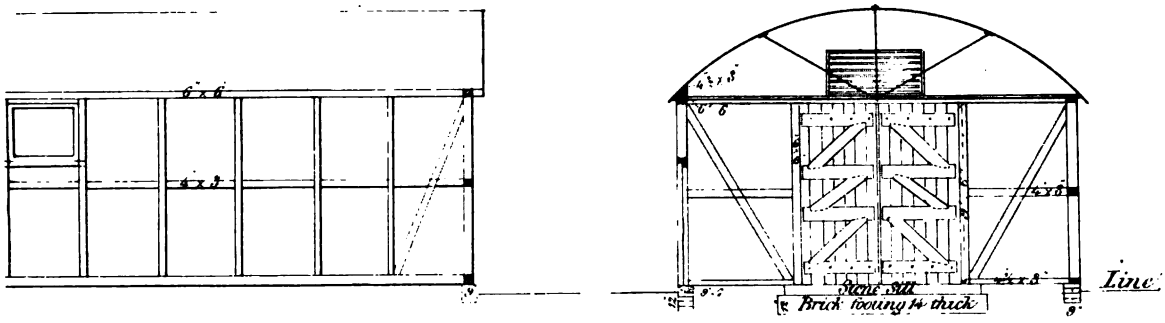
PL



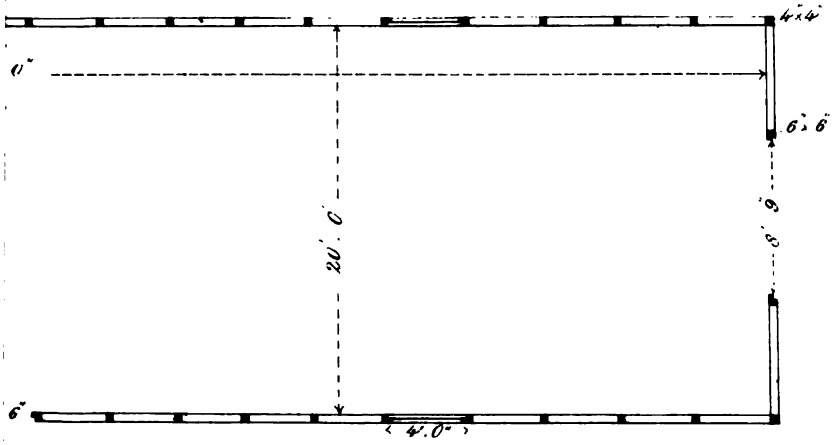
Sc

SARIAT

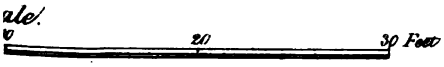
E BARN



SECTION ON A.B.



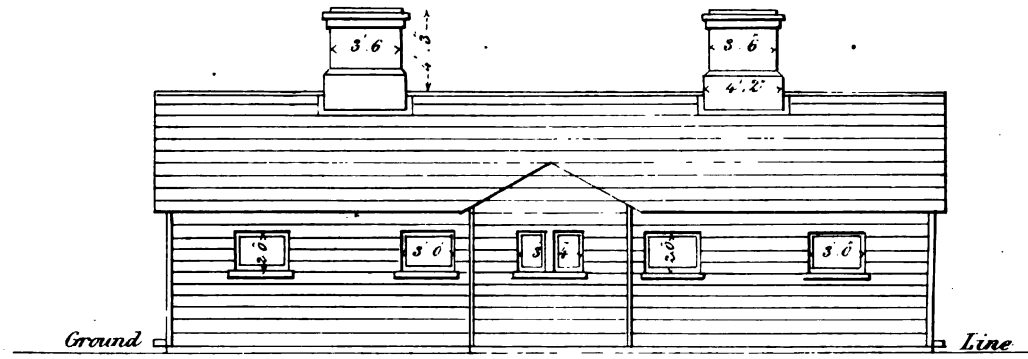
AN



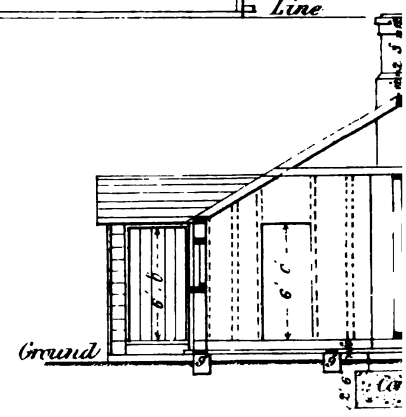
E.J. Harty, Lith. 9, Dame St. Dublin

ROYAL ENGINEER

HUTS FOR CIV

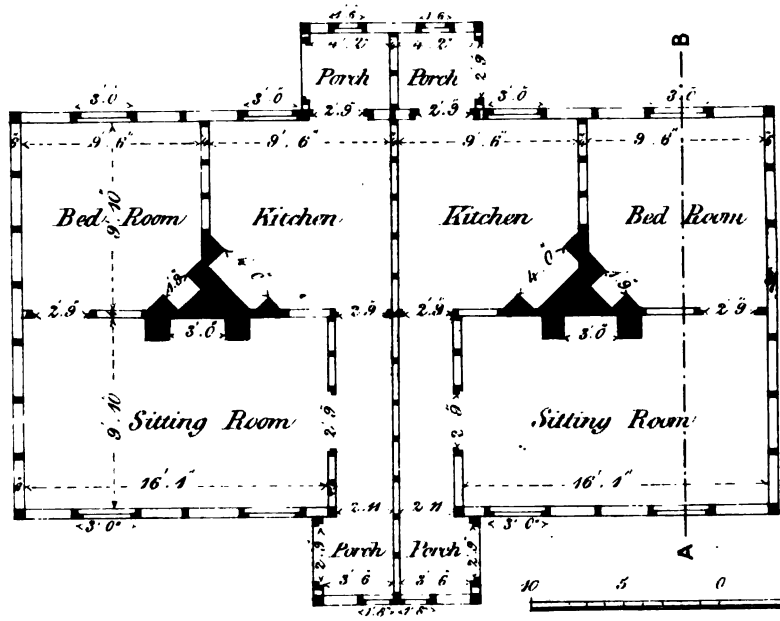


FRONT ELEVATION



SECTIOI

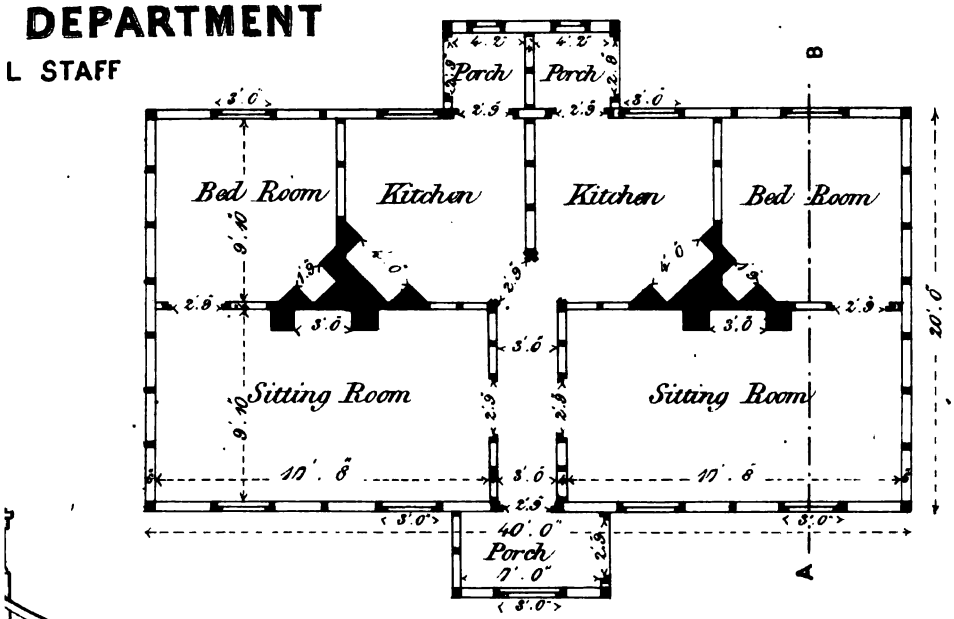
PLAN



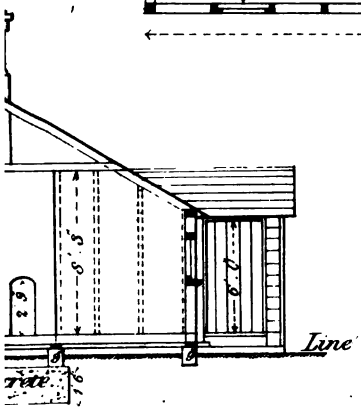
Sca

DEPARTMENT

L STAFF

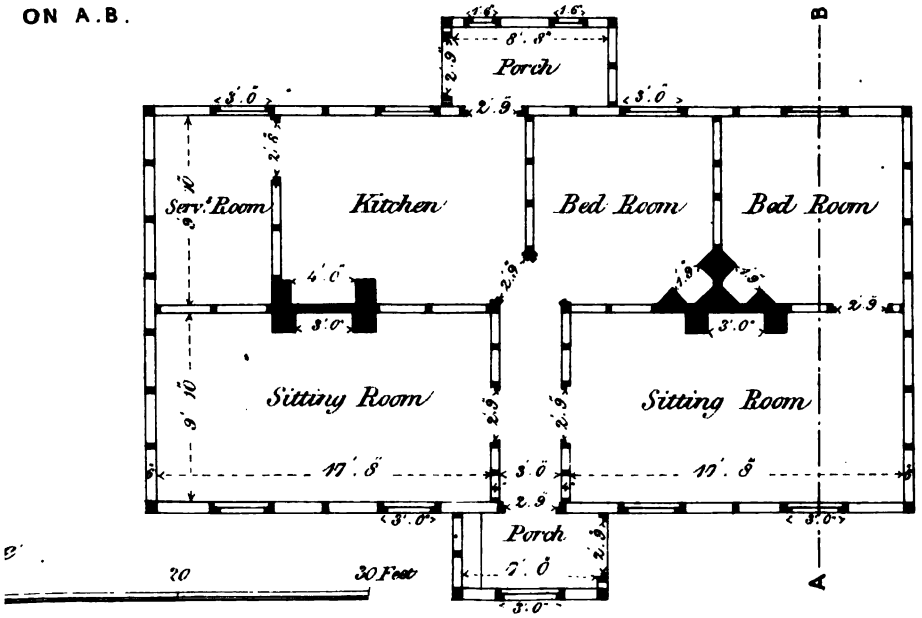


PLAN



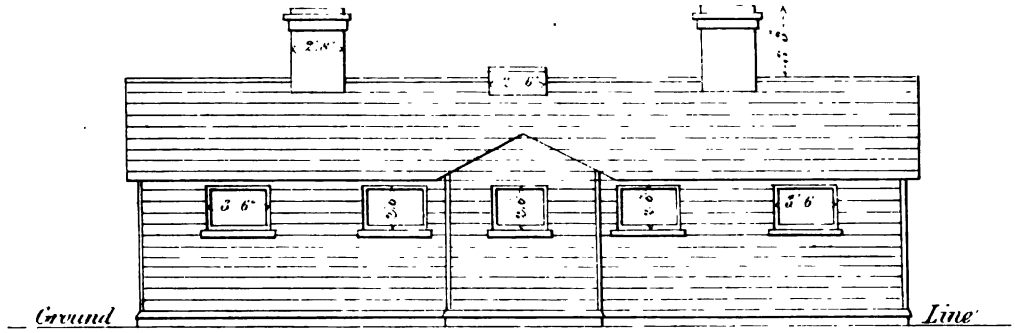
PLAN

ON A.B.

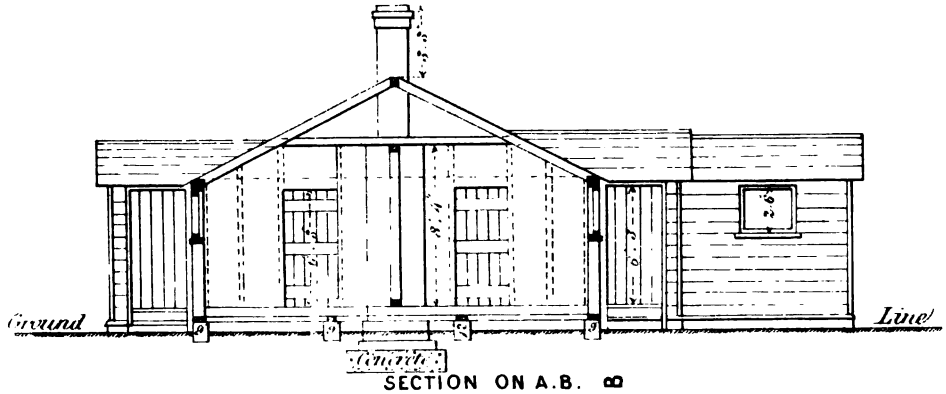


Ed. Hanx Lith. 9 Dame St. Dublin.

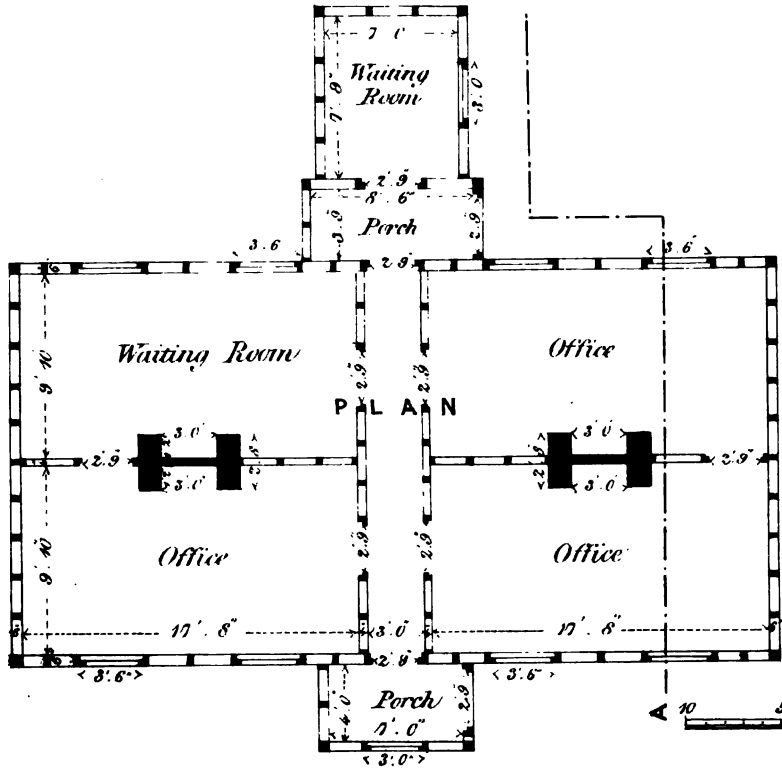
ROYAL ENGINEE
OFFI



FRONT ELEVATION

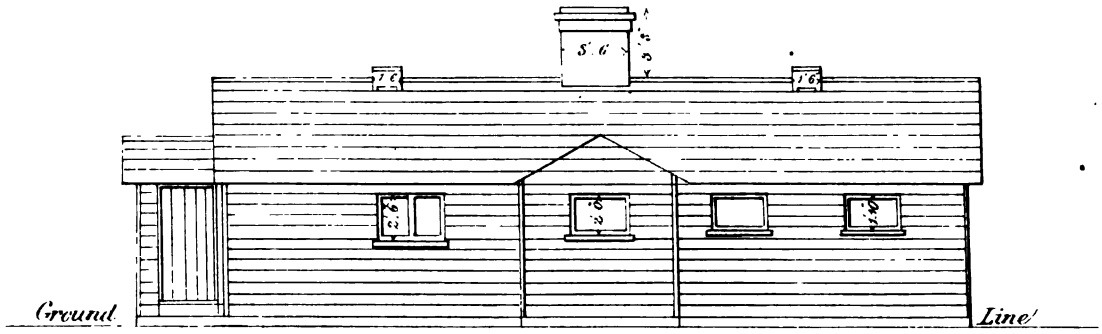


SECTION ON A.B.

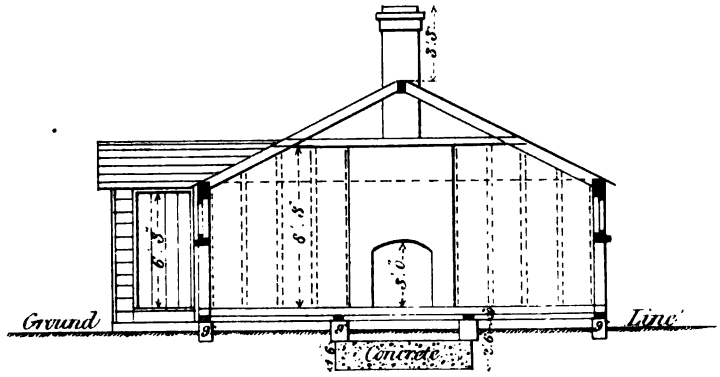


Scal

DEPARTMENT
CES

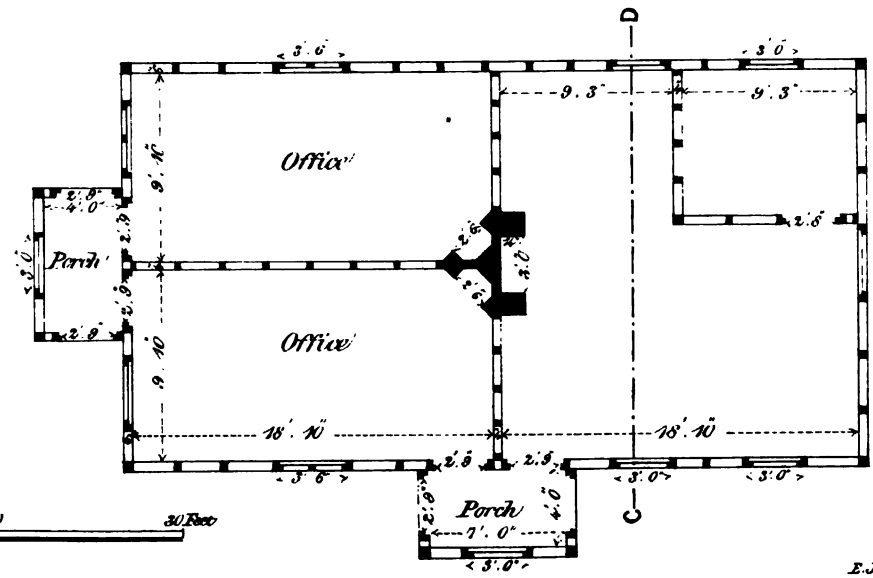


FRONT ELEVATION



SECTION ON C.D.

PLAN

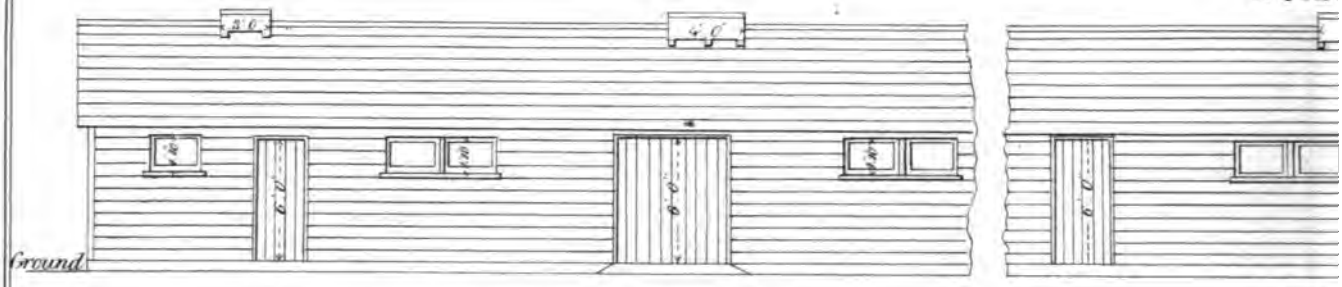


20 30 Feet

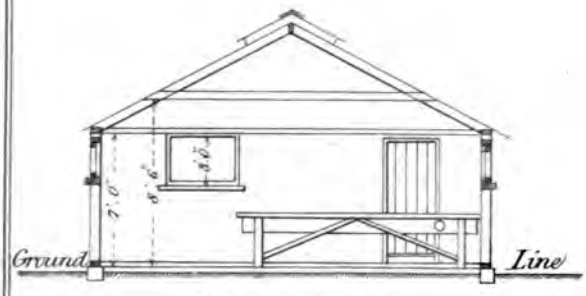
E.J. Harty, Lith, 9, Dame St. Dublin

ROYAL ENGINEE

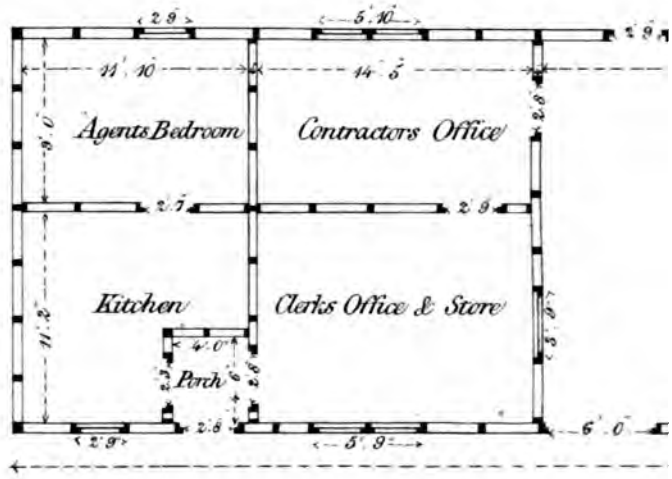
WORK

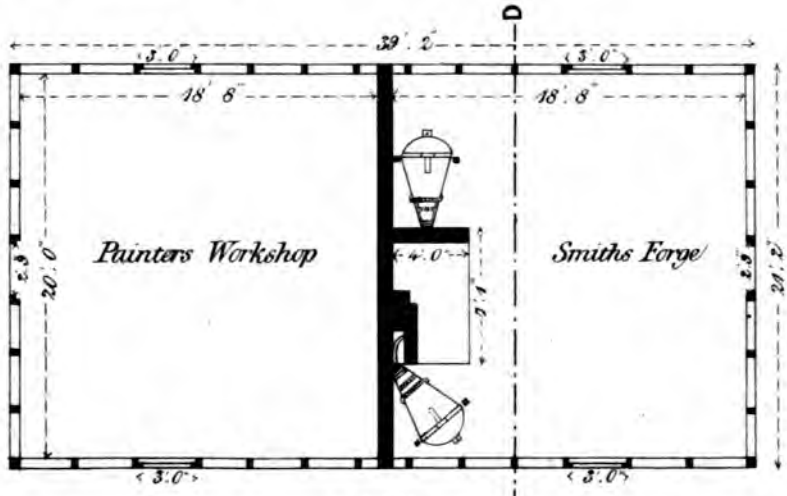


ELEVA

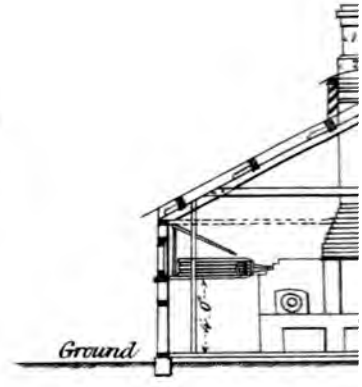


SECTION ON A.B





PLAN



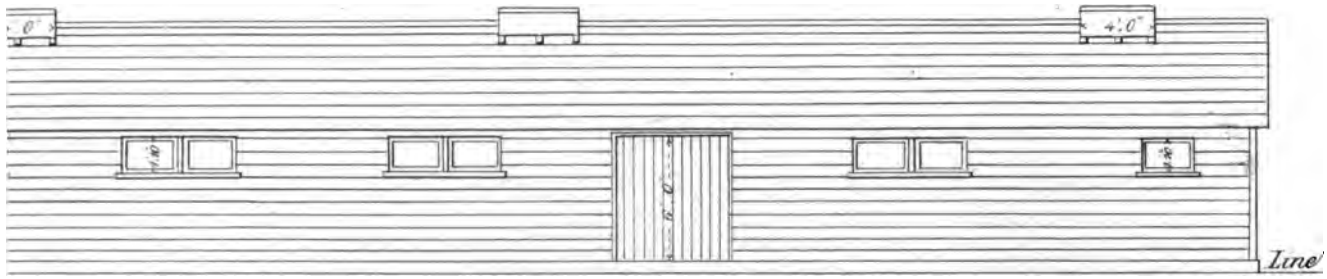
SECTION

S

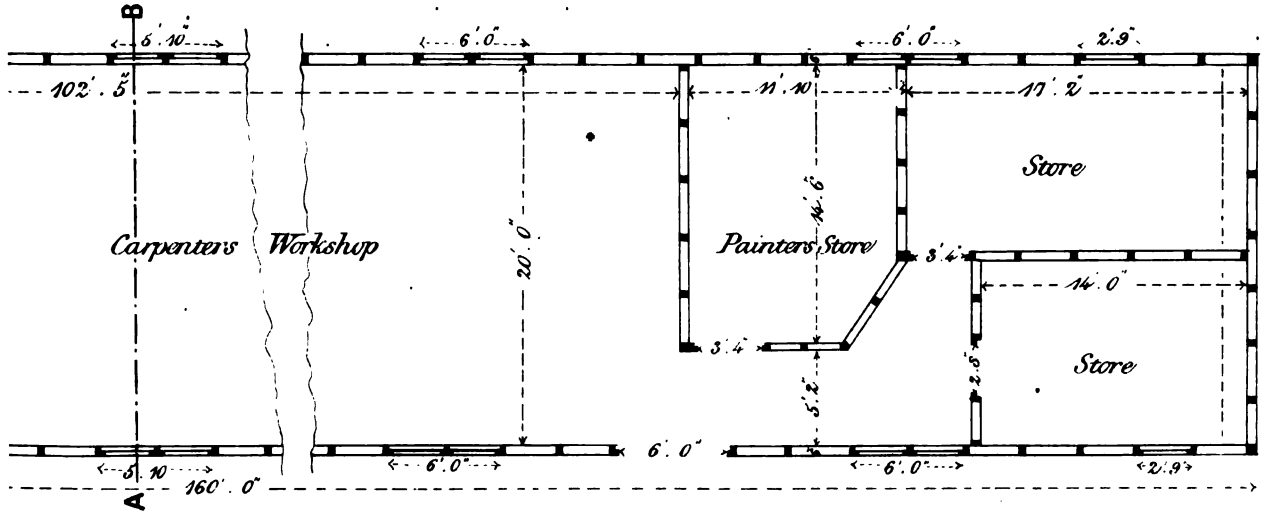
10 5 0

℟ DEPARTMENT

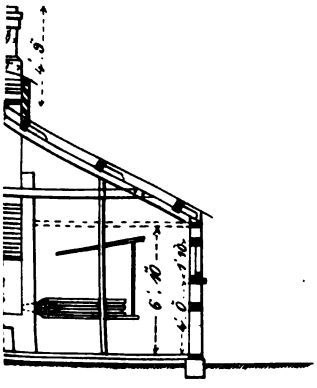
SHOPS



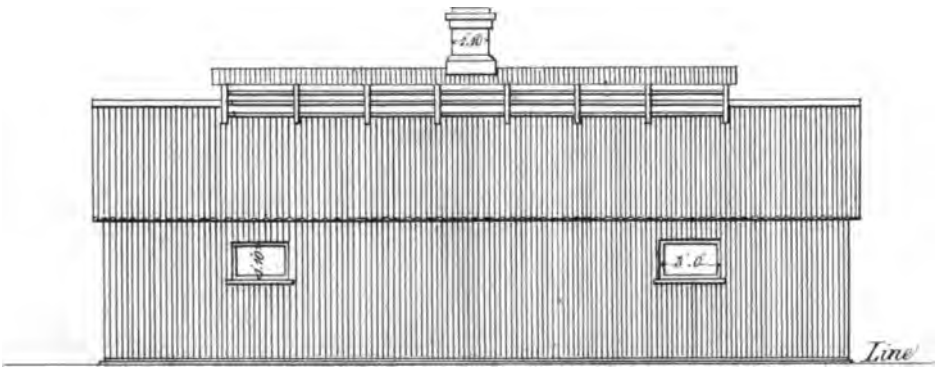
ION.



PLAN



N C.D

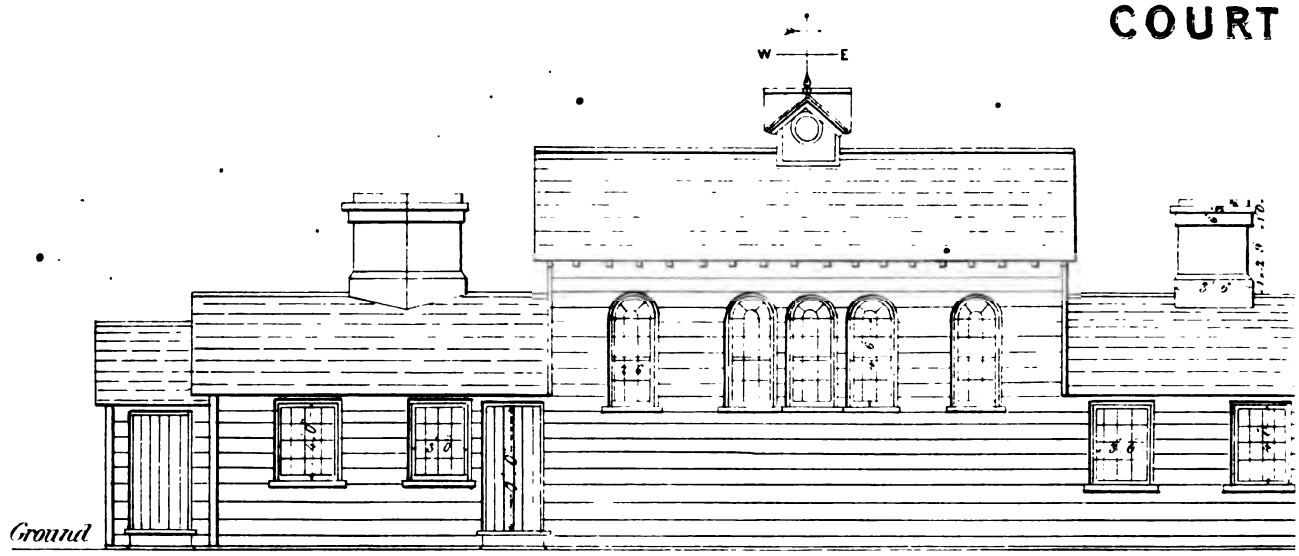


ELEVATION

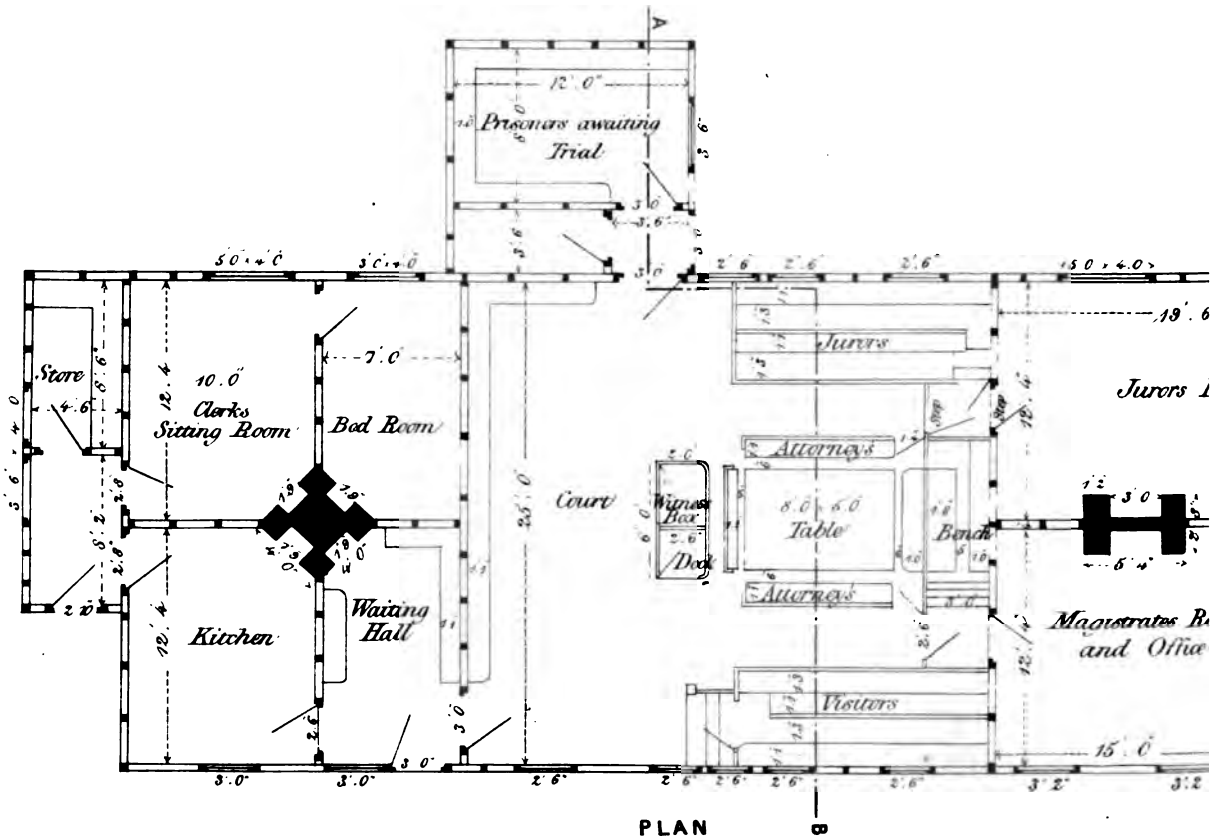
ale
0 20 30 Feet

E.J.Barry, Lith. 9 Dame Str. Dublin.

COURT



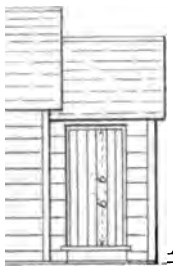
ELEVATION

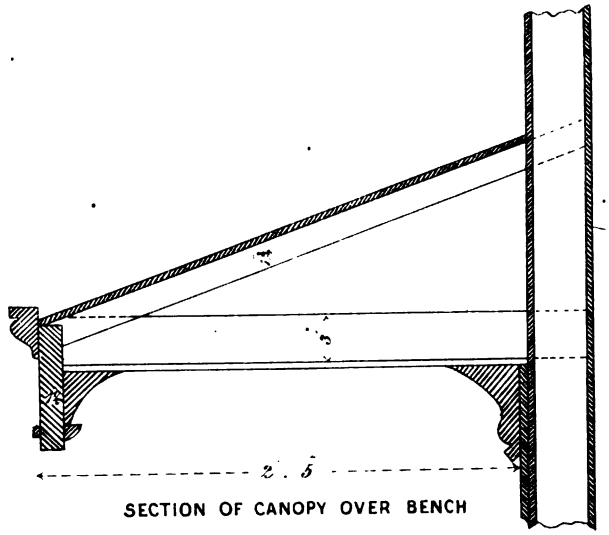


PLAN

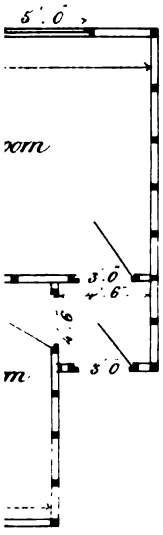
10 5 0

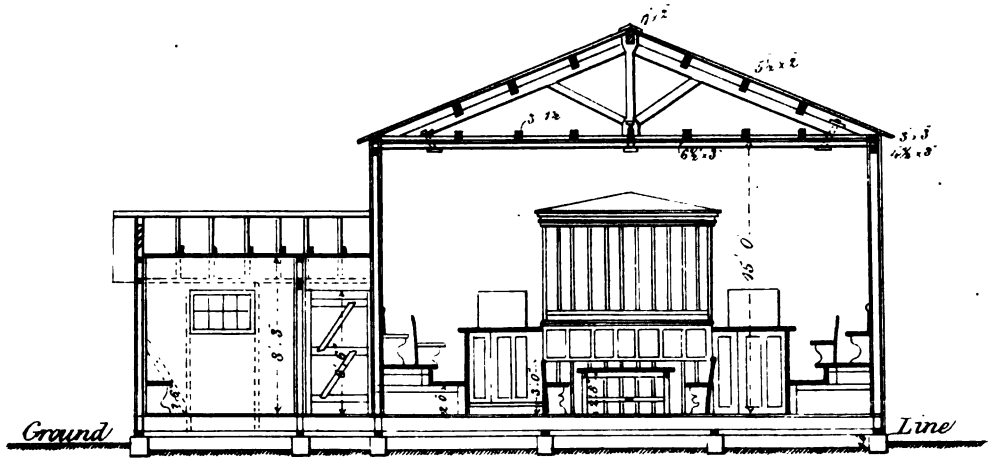
HOUSE





SECTION OF CANOPY OVER BENCH





SECTION ON A.B.

0 20 30 Feet

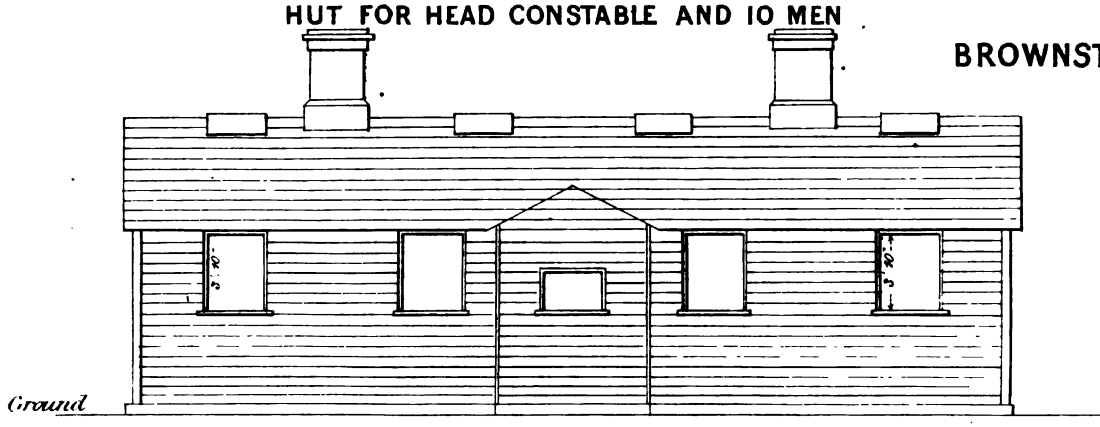
E.J.Hare, Lith. 9, Dame So. Dublin

CONSTABULA

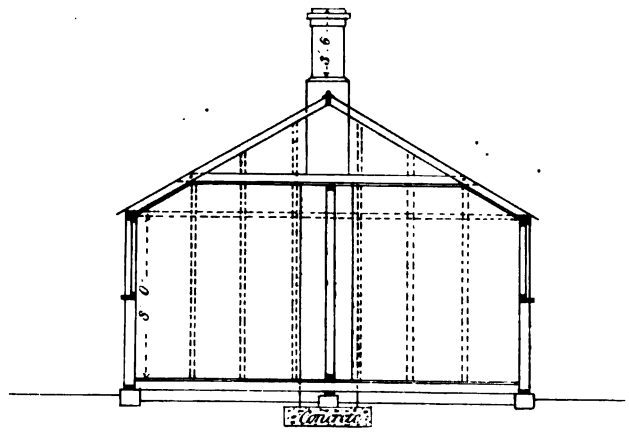
AT

BROWNSTOWN A

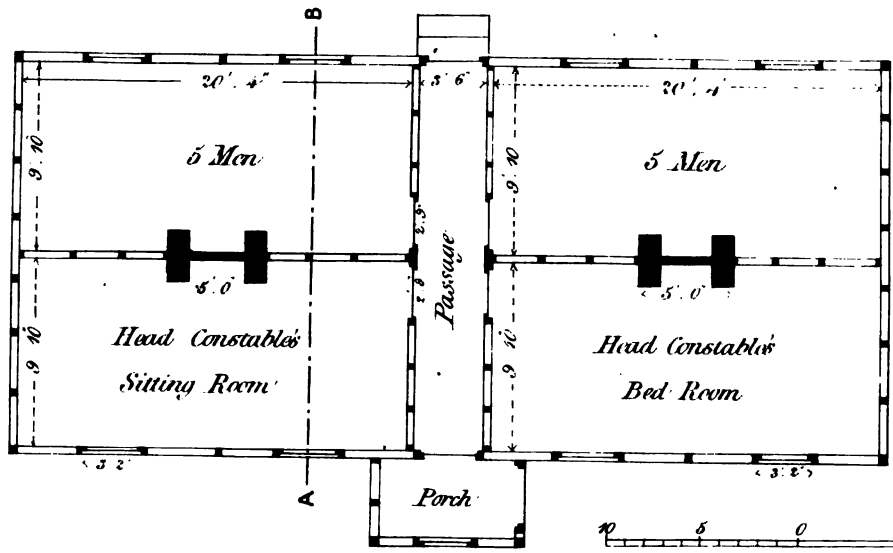
HUT FOR HEAD CONSTABLE AND 10 MEN



ELEVATION



SECTION ON A.B.

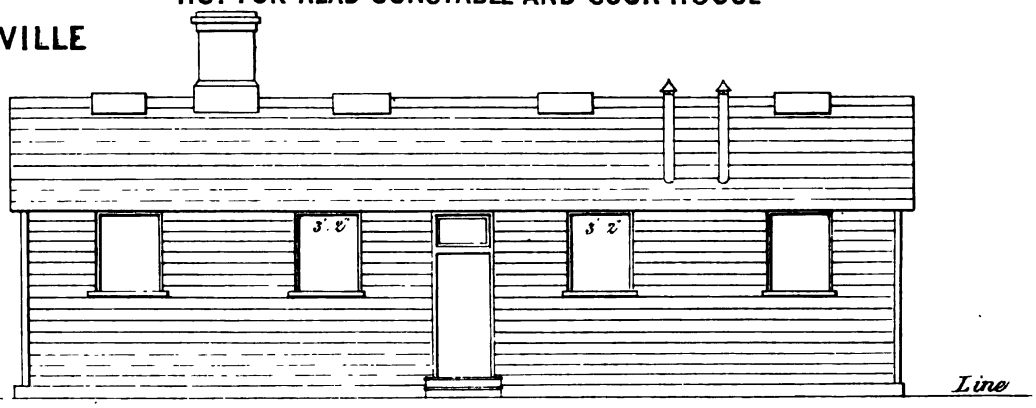


Scal

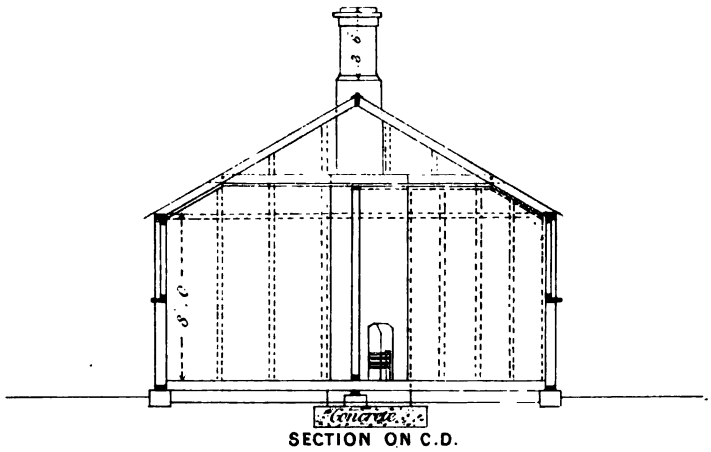
RY BARRACKS

ND LUMMVILLE

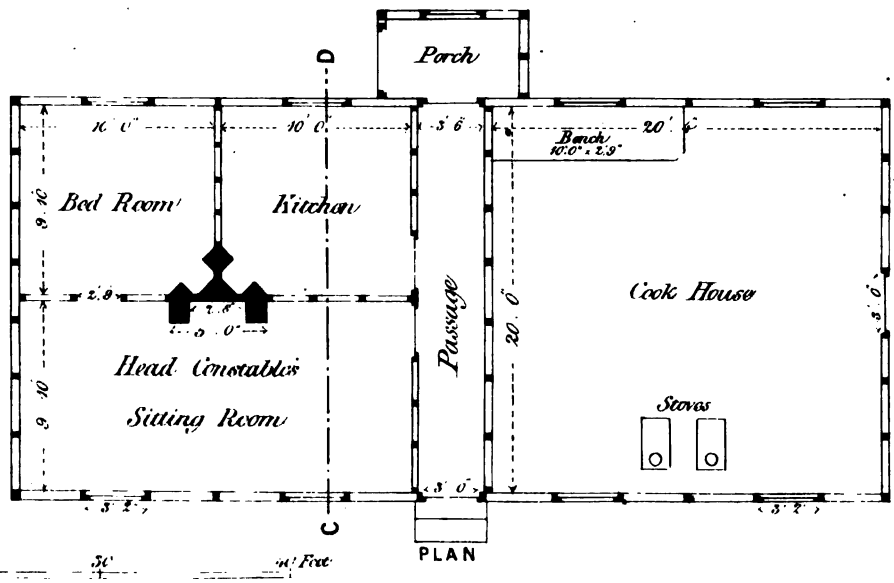
HUT FOR HEAD CONSTABLE AND COOK HOUSE



ELEVATION



SECTION ON C.D.

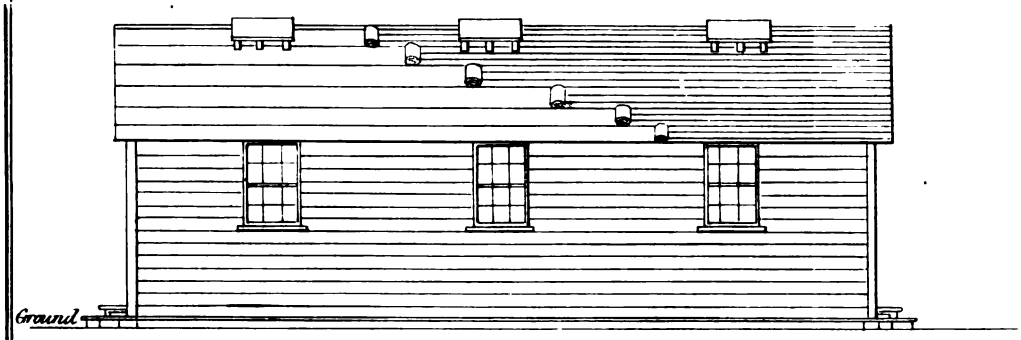


PLAN

20 30 40 Feet

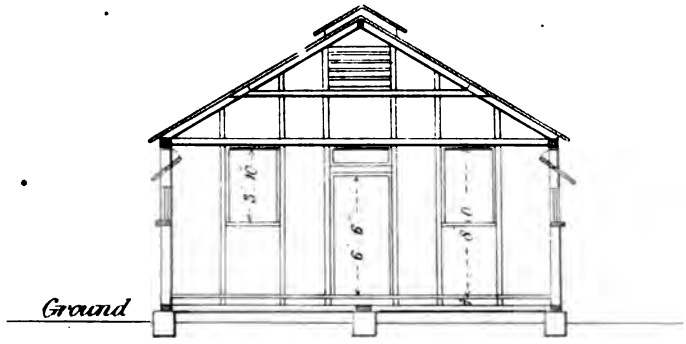
E. J. Harty Lith. 9 Dame St. Dublin

HUT FOR 17 CONSTABLES

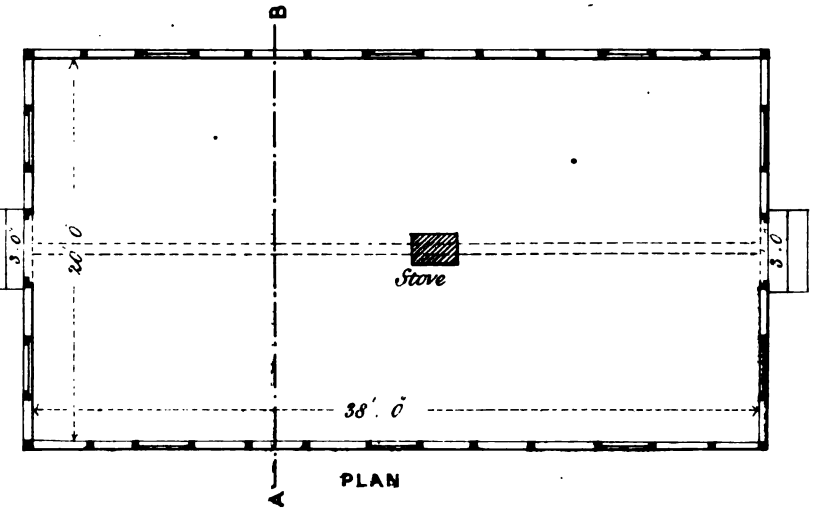


ELEVATION

NOTE. The wooden roofs throughout the Camp are covered with tarred felt as shewn above.



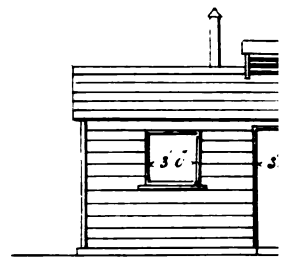
SECTION ON A.B



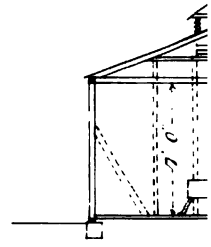
PLAN

CONSTABUL

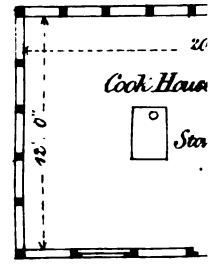
COOK



ELEV



SECTION



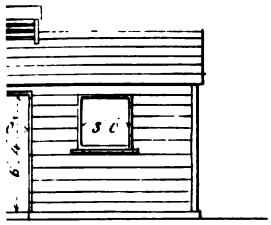
P

Scale

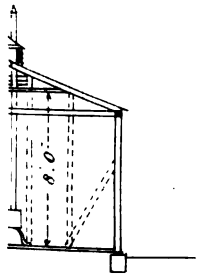
10 5 0 20

ARY BARRACKS

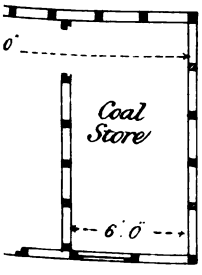
HOUSE



ATION

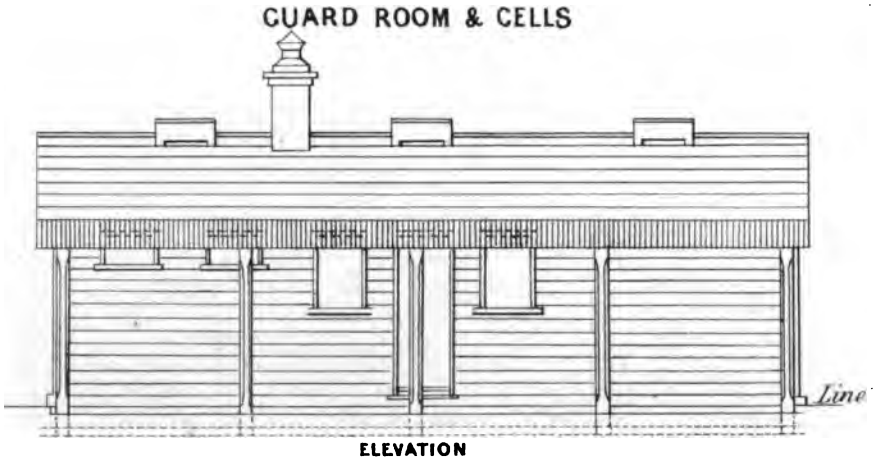


ON A.B

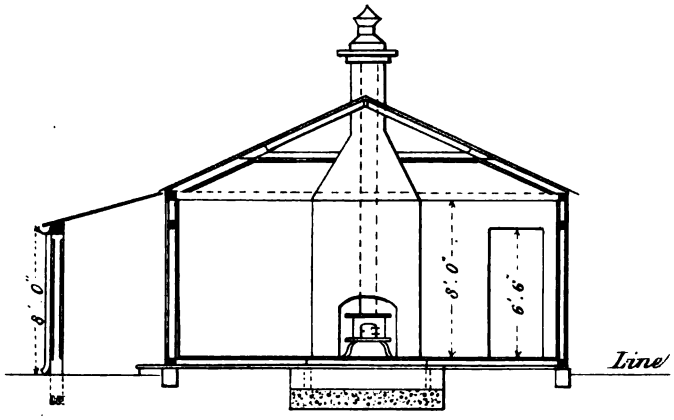


AN

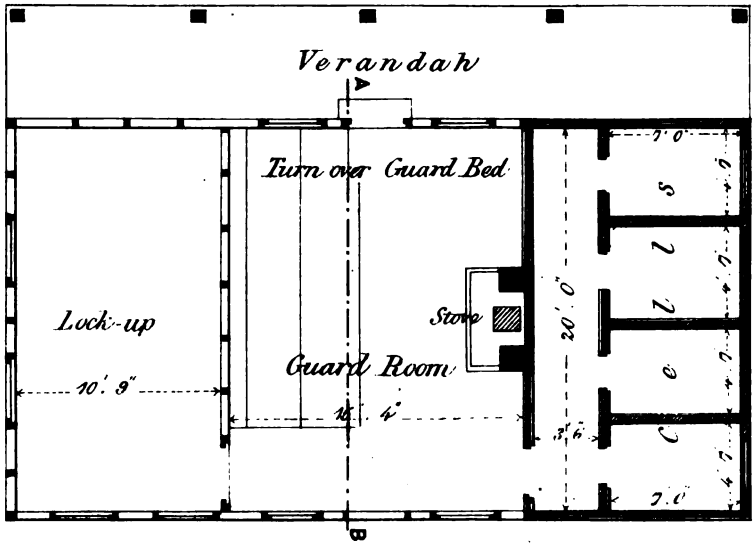
GUARD ROOM & CELLS



ELEVATION



SECTION ON A.B

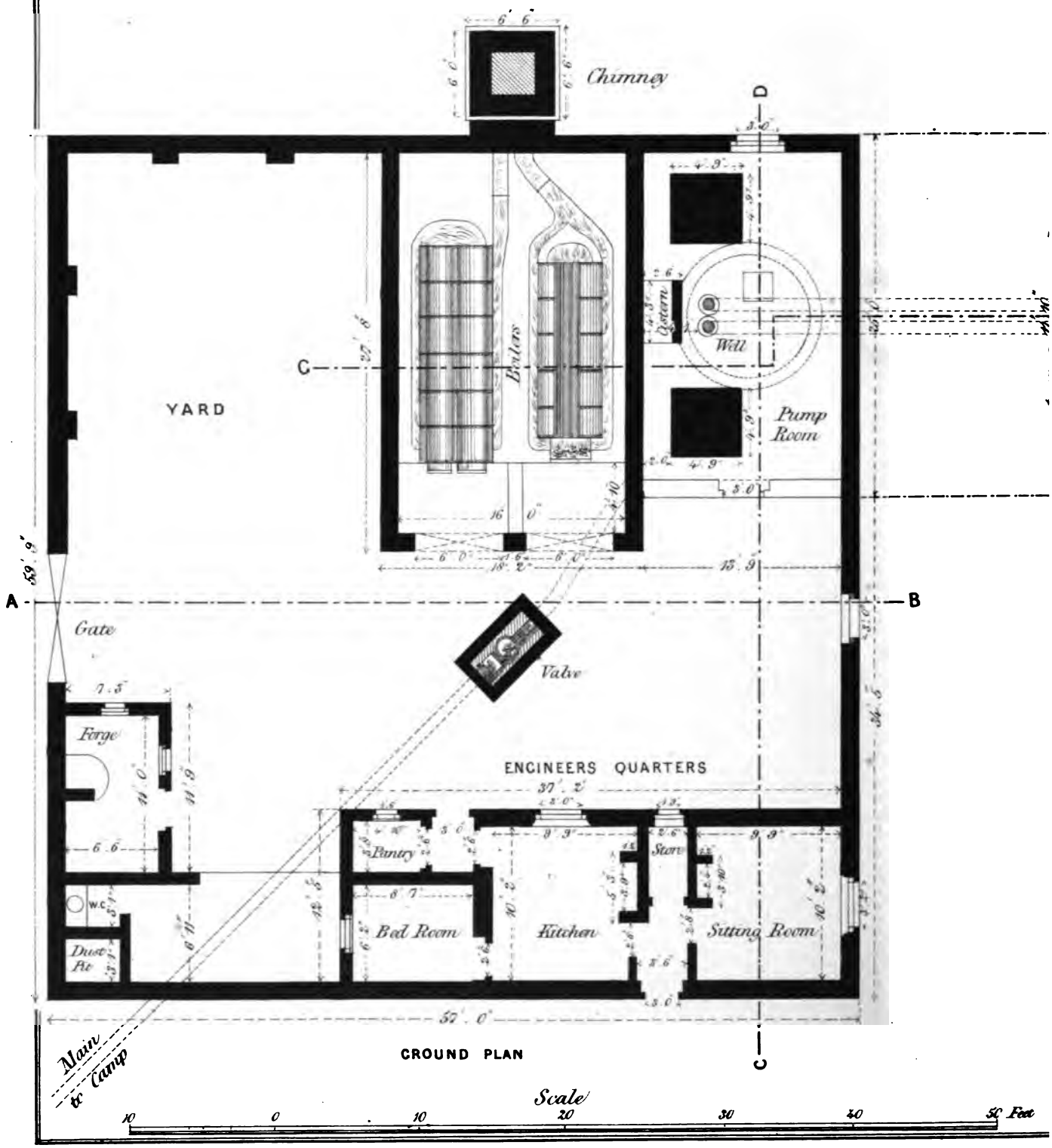


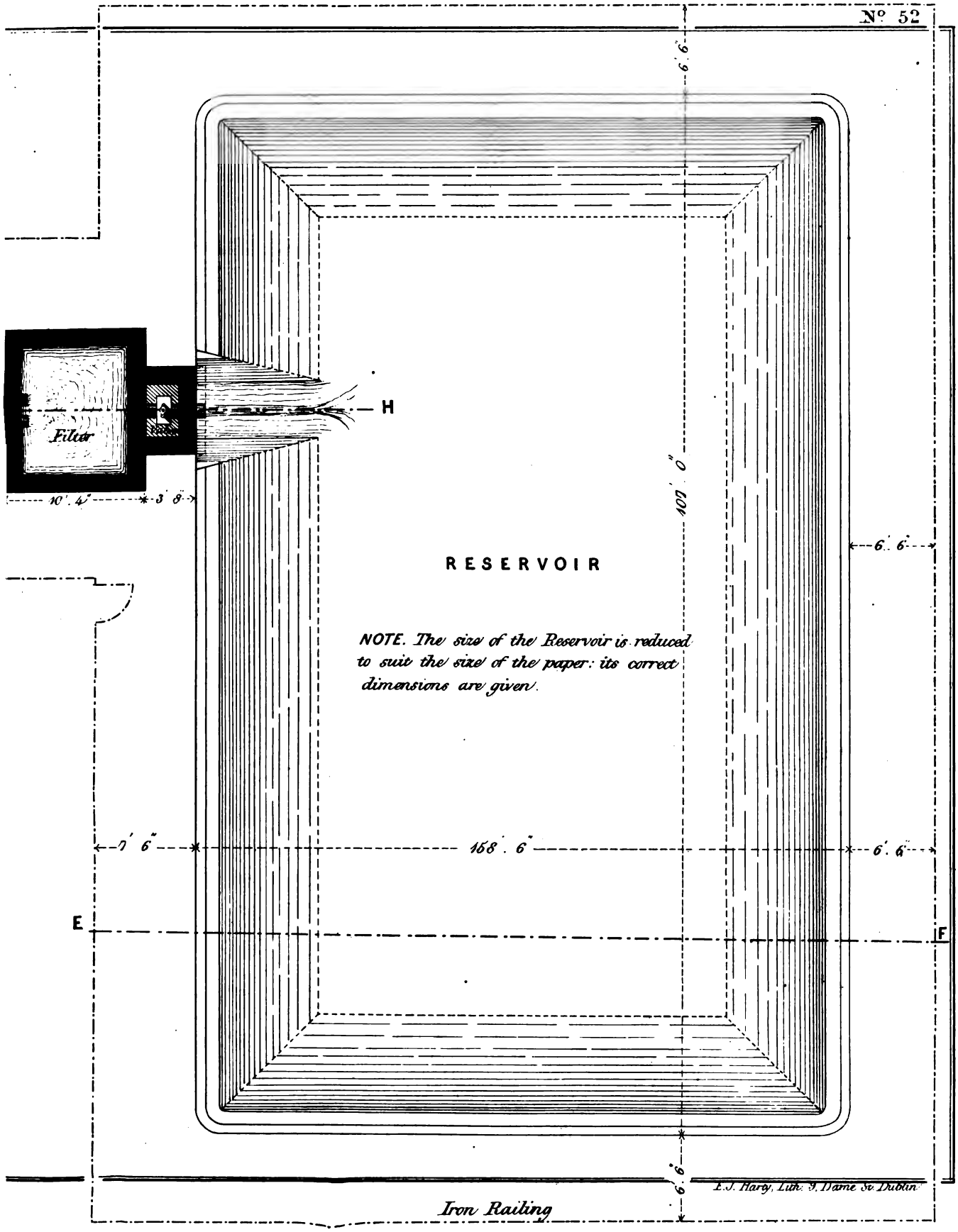
PLAN

20 30 Feet

E.J. Harty lith. 9 Dame St. Dublin

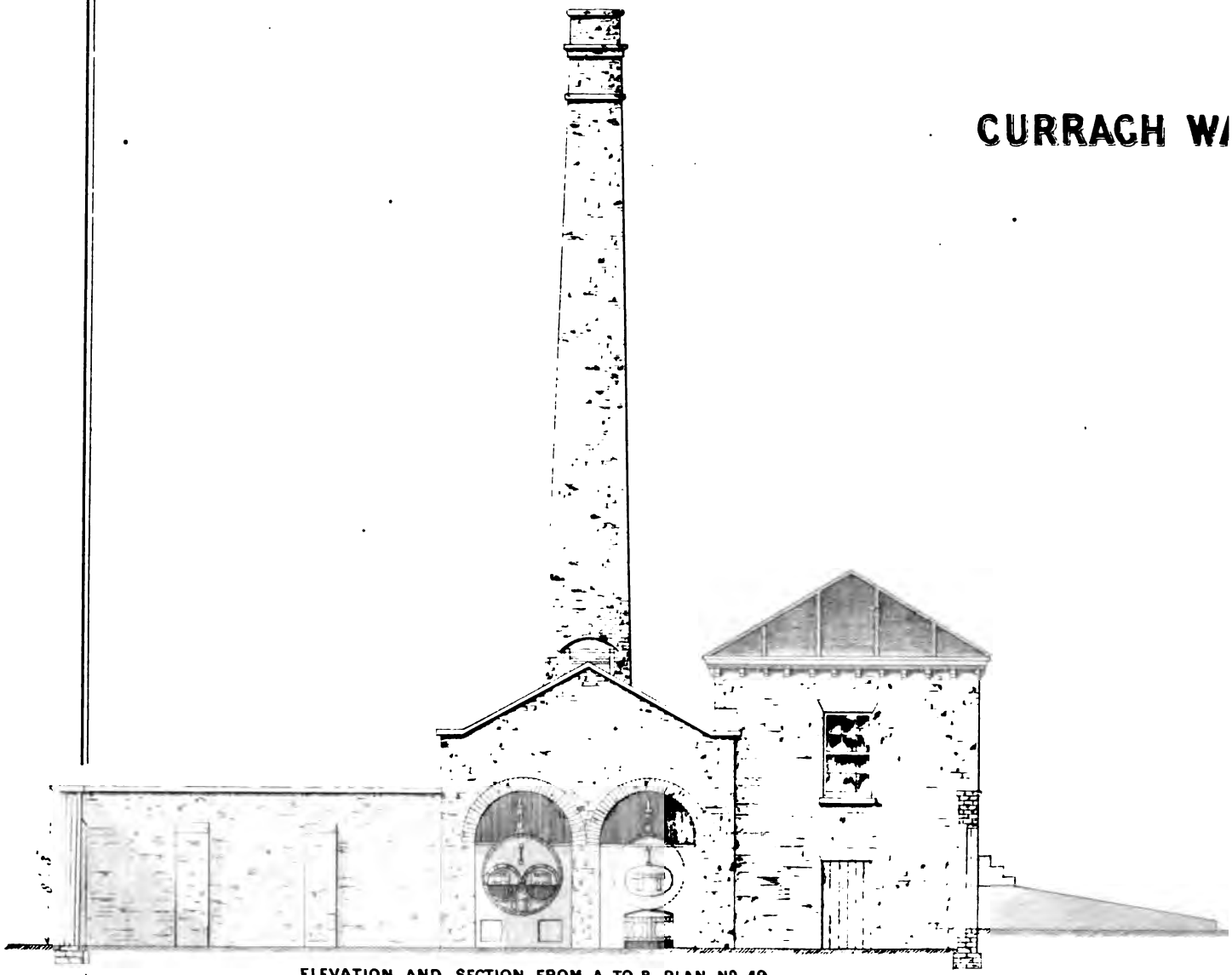
CURRAGH WATER WORKS



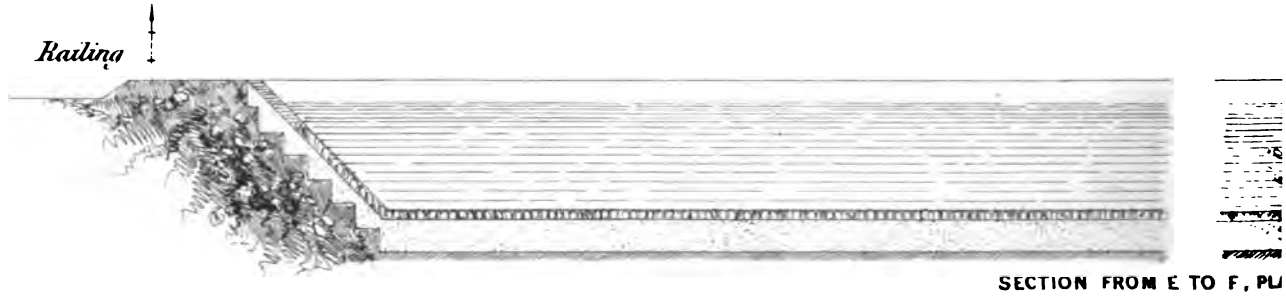


E.J. Harty, Lith. 9, Dame St. Dublin.

CURRACH WI



ELEVATION AND SECTION FROM A TO B PLAN Nº 49.

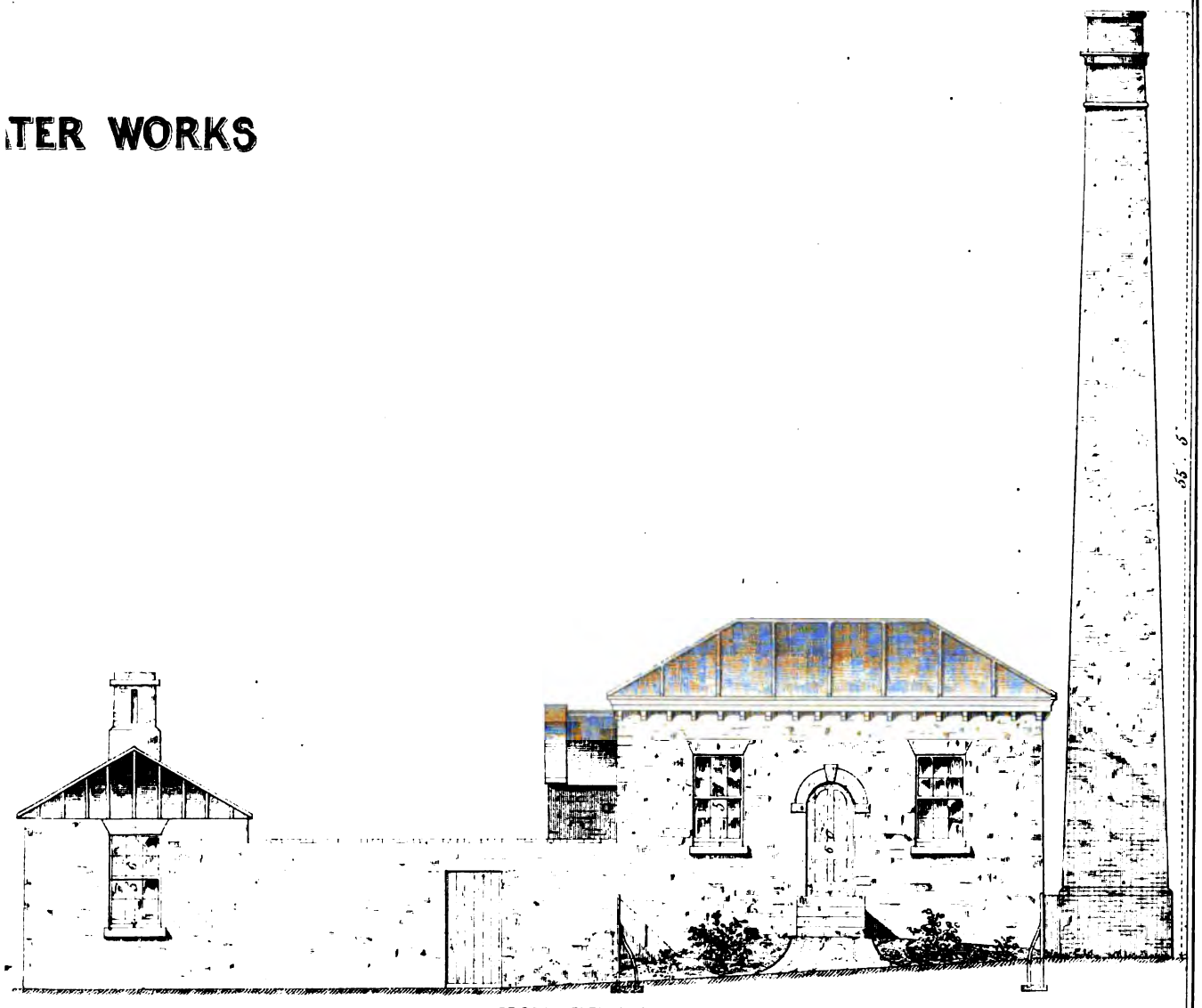


SECTION FROM E TO F, PL

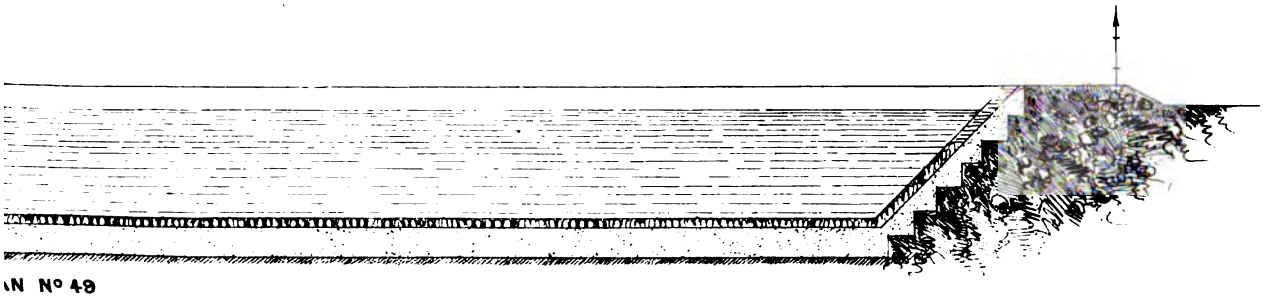
Sc

KC 5 C KC

...TER WORKS



FRONT ELEVATION



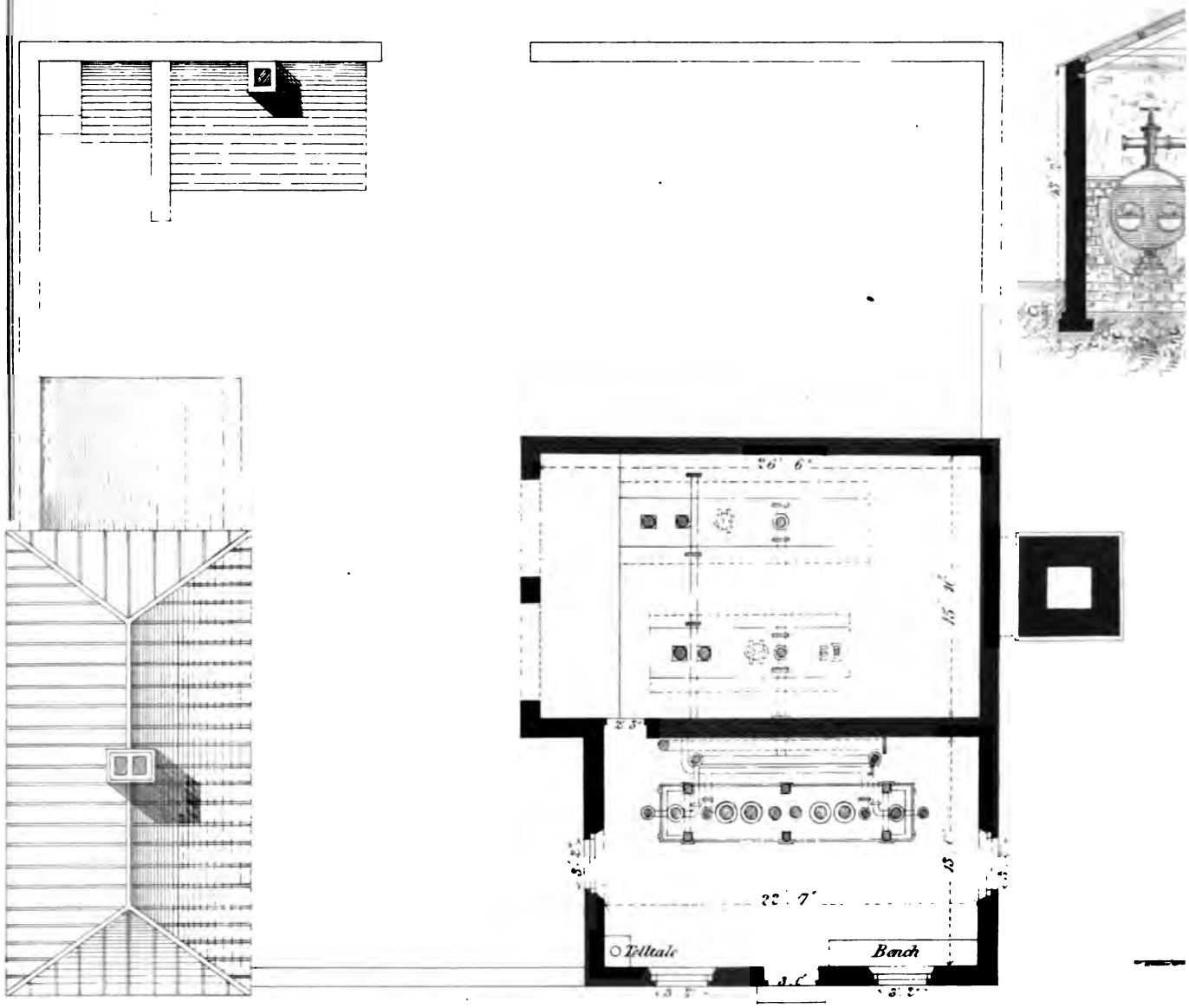
...N Nº 48

...ale

20 30 40 Feet

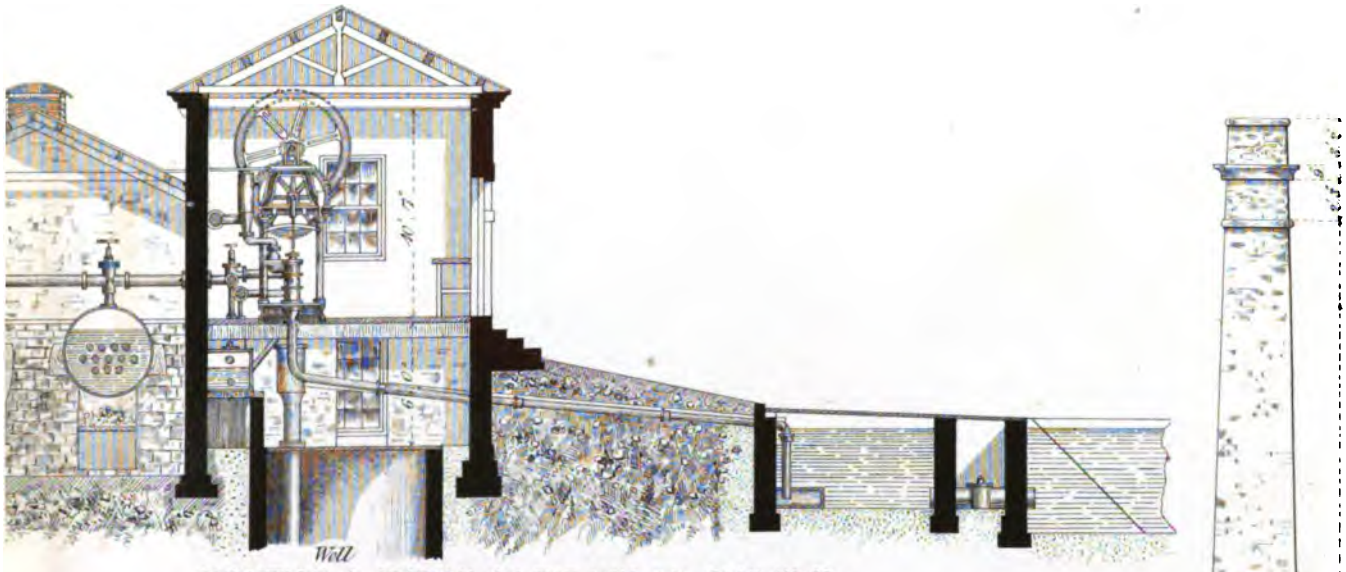
E. J. Hayes Lith 9. Dame St. Dublin

CURRACH WA

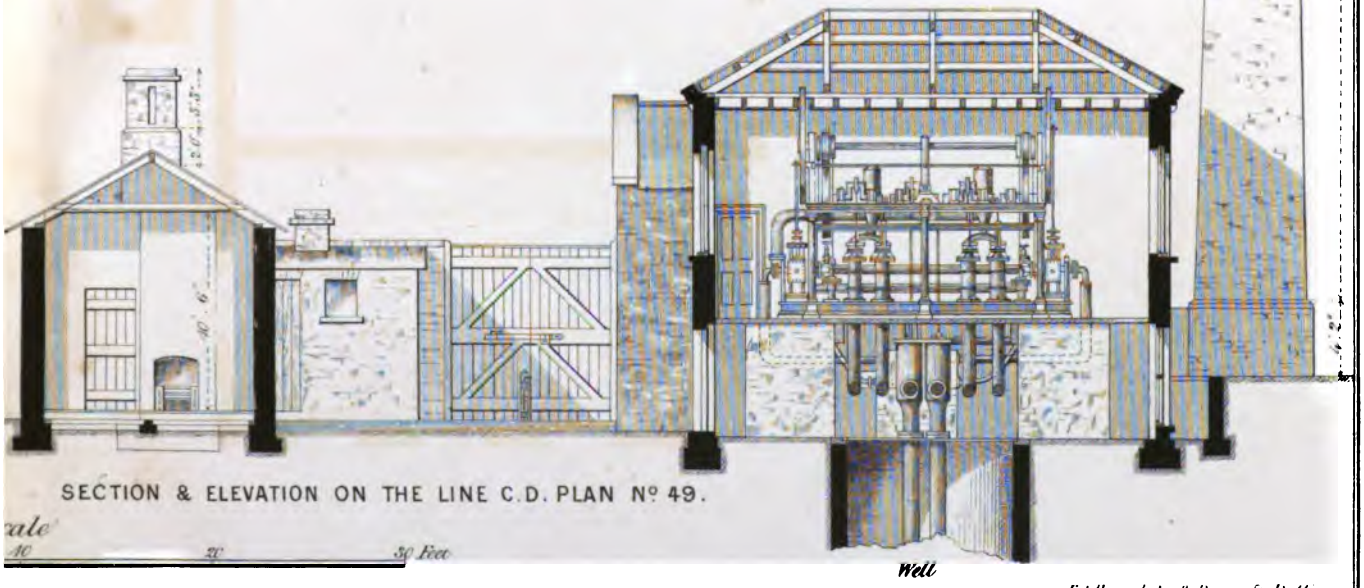


PLAN

TER WORKS



ELEVATION & SECTION ON THE LINE C.D. PLAN Nº 49.



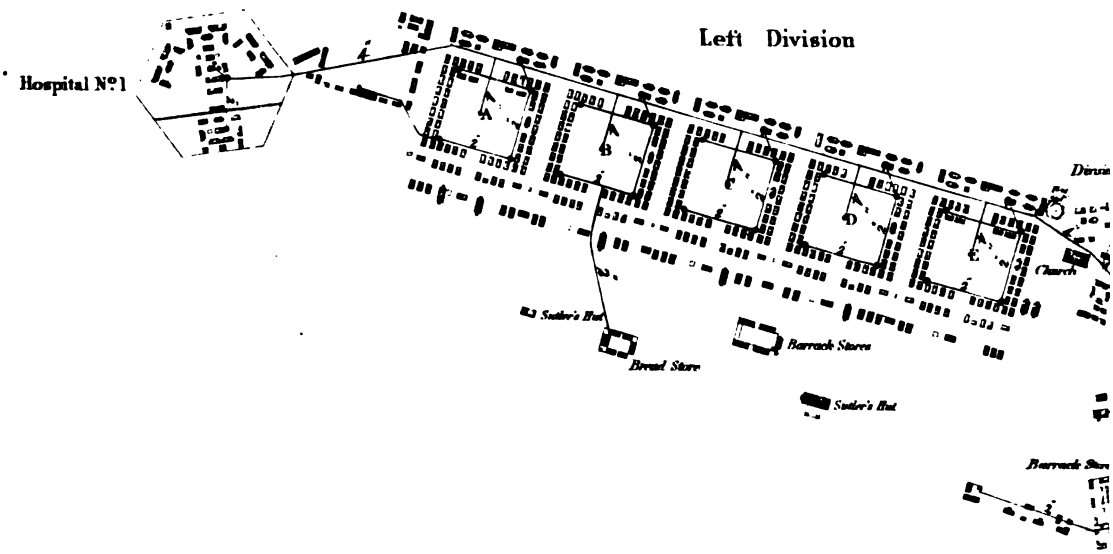
SECTION & ELEVATION ON THE LINE C.D. PLAN Nº 49.

Scale
10 20 30 Feet

E.J. Harty, Lith. 9, Dame St. Dublin.

WATER

PLAN SHEWING THE MANNER IN WHICH T
THE CAMP.

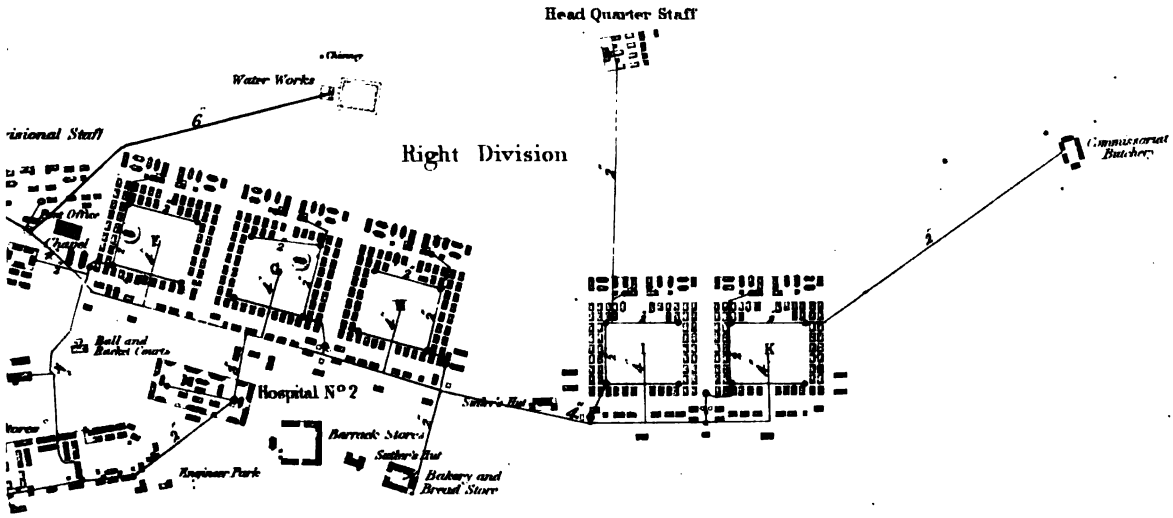


IRON TANK FOR 10,000 GALLONS

Note_ The sizes of the Cast Iron distri
Ascending pipes from the Water-Ta
Clock Tower, 6 inches in diameter
Pipes from the valve box to the 10
Hare Park, &c and to the fire plugs
diameter.
Distribution pipes round the sque
buildings 2 and 3 inches in diam

W O R K S.

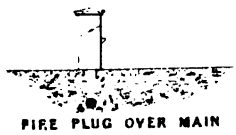
THE WATER IS DISTRIBUTED THROUGHOUT
AMP.



ribution pipes are as follows.
Works to the valve box in the
r.
0.000 gallon tanks in the Squares.
in the centres of squares 4 inches in

uares and to the detached blocks of
meter.

PLAN



FIRE PLUG OVER MAIN PIPE

FIRE PLUG WITH 3 ORIFICES IN THE CENTRE OF EACH SQUARE

Edit.d at the Ordnance Survey Office Dublin.